

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION**

ORDER NO. R9-2018-0023

**MASTER RECYCLING PERMIT
FOR THE UNITED STATES MARINE CORPS BASE CAMP PENDLETON, SOUTHERN
REGIONAL TERTIARY TREATMENT PLANT, SAN DIEGO COUNTY**

The United States Marine Corps is subject to waste discharge requirements as set forth in this Order.

Table 1. Discharger Information

Discharger	United States Marine Corps Base, Camp Pendleton
Name of Facility	Southern Regional Tertiary Treatment Plant
Facility Address	Building 22165, Box 555008-5008
	Camp Pendleton, CA 92055-5008
	San Diego County
Facility Contact, Title, and Phone	Mr. Mark Bonsavage, Head, Environmental Engineering Branch (760) 725-4557
Type of Facility	Wastewater Treatment Plant
Facility Design Flow	7.5 million gallons per day (mgd)

Table 2. Discharge Location

Discharge Points	Effluent Description	Hydrologic Area of Discharge
Recycled water irrigation sites are restricted to the Ysidora HA and Mission HSA, the Red Beach disposal well field, and the Ysidora Flats injection well field.	Disinfected Tertiary Recycled Water	San Onofre HA (901.50) of the San Juan Hydrologic Unit (HU) Ysidora HA (902.10) of the Santa Margarita HU Mission HSA 903.11 of the San Luis Rey HU

Table 3. Effective Date

This Order was adopted by the California Regional Water Quality Control Board, San Diego Region and is effective on:	May 9, 2018
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I, David W. Gibson, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on May 9, 2018.

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I. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (San Diego Water Board), finds:

- A. **Background. Order No. R9-2018-0023 (Order)** updates the Southern Regional Tertiary Treatment Plant's (SRTTP) Master Reclamation Permit¹ and addendum² to add requirements for the creation of a seawater intrusion barrier by injecting disinfected tertiary recycled water, and for disposal of disinfected tertiary recycled water produced by the SRTTP at coastal injection wells. These updates to the Order are incorporated from the engineering design, operating parameters, and environmental monitoring procedures proposed in a revised Report of Waste Discharge (ROWD) submitted by the U.S. Marine Corps (USMC) dated April 2017. The Order also requires the USMC to update its Rules and Regulations associated with the operation of its recycled water fill station and for the transport of recycled water and use of recycled water from fill stations.

The Order revises the discharge specification for total dissolved solids, chloride, and sulfate to their respective water quality objectives for the Ysidora Basin. This is because the Ysidora Basin groundwater quality objectives are the most stringent of the basins where recycled water is used. The Order raises the total nitrogen effluent discharge specification to 10 mg/L to be consistent with the recently revised nitrate water quality objective for groundwater basins in the San Diego Region. The Order also adds Special Provision VI.I which requires monitoring and sets concentration objectives for indicator parameters for the injection of recycled water into the Lower Ysidora groundwater basin for the purpose of creating the seawater intrusion barrier.

- B. **Legal Authorities.** This Order is issued pursuant to section 13263 and 13523.1 of the Water Code. This Order serves as a Master Recycling Permit, which also includes Waste Discharge Requirements (WDRs) issued pursuant to article 4, chapter 4, division 7 of the Water Code.
- C. **Rationale for Requirements.** The San Diego Water Board developed the requirements in this Order based on information in the Report of Waste Discharge, self- monitoring reports, water quality control plans and policies, observations made during compliance inspections and site visits, and other available information. An Information Sheet (Attachment C) was prepared for this Order, which contains background information and rationale for Order requirements. The Information Sheet is hereby incorporated into and constitutes findings for this Order.

1 Order No. R9-2009-0021, Master Reclamation Permit for Southern Region Tertiary Treatment Plant, United States Marine Corps, Camp Pendleton, San Diego County.

2 Addendum No. 1 to Order R9-2009-0021, Master Reclamation Permit for the Southern Regional Tertiary Treatment Plant, United States Marine Corps, Camp Pendleton, San Diego County.

- D. **Antidegradation Policy.** The State Water Resources Control Board (State Water Board) established California's Antidegradation Policy in Resolution No. 68-16, *the Statement of Policy with Respect to Maintaining High Quality of Waters in California*. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The San Diego Water Board's Basin Plan implements and incorporates by reference both the State and federal antidegradation policies. As discussed in Section V of the Information Sheet, the discharge regulated by this Order is consistent with the Antidegradation Policy.
- E. **Notification of Interested Persons.** The San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to adopt a Master Recycling Permit that prescribes waste discharge requirements and water recycling requirements in this Order. The San Diego Water Board also provided stakeholders with an opportunity to submit their written comments and recommendations. Details of the notification are provided in Section IX of the Information Sheet.
- F. **Consideration of Public Comment.** The San Diego Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the scheduling for the Public Hearing are provided in Section IX of the Information Sheet.
- G. **California Environmental Quality Act.** The San Diego Water Board is the lead agency under the California Environmental Quality Act (CEQA) for the adoption of this Master Recycling Permit. The environmental impacts associated with the project were analyzed by the USMC in an Environmental Impact Statement (EIS), a Supplemental Environmental Assessment (SEA), and a Continuing Environmental Review Statement (CERS) in accordance with the National Environmental Policy Act. The San Diego Water Board prepared an Addendum to the EIS and SEA to evaluate environmental impacts associated with greenhouse gas emissions, population inducement, and mitigation measures to satisfy the requirements of CEQA.
- As the lead agency under CEQA, the Board considered the EIS, SEA, CERS, and Addendum to the EIS and SEA, and the project's environmental effects as described in those documents. The Board concurs that the project will not have a significant impact on the environment.
- H. **Marine Corps Base Camp Pendleton Potable Well Restrictions for Lower Ysidora Basin.** The ROWD submitted by the Marine Corps Base Camp Pendleton (MCBCP) indicates that the USMC has no plans to construct new drinking water wells in the Lower Ysidora Subbasin (HSA 902.11), as long as the discharge of recycled water into the subbasin at the Ysidora Flats injection well field is active.
- I. **Rescission of Outdated Master Reclamation Permit.** The SRTTP has been regulated under Order No. R9-2009-0021, Master Reclamation Permit for Southern

Regional Tertiary Treatment Plant, United States Marine Corps, Camp Pendleton, San Diego County and Addendum No. 1 to Order R9-2009-0021, An Addendum to Incorporate Requirements for Recycled Water Use at New Reuse Sites, and Modifying Discharge Specifications for Several Chemical Constituents. Order No. R9-2018-0023 supersedes Order No. R9-2009-0021 and addendum except for enforcement purposes.

THEREFORE, IT IS HEREBY ORDERED, that this Order supersedes Order No. R9-2009-0021 and addendum upon the effective date of this Order except for enforcement purposes. In order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and applicable regulations, it is further ordered that the Discharger comply with the requirements in this Order. This action does not prevent the San Diego Water Board from taking enforcement actions for past violations of Order No. R9-2009-0021.

II. DISCHARGE PROHIBITIONS

- A. Discharge of waste, other than incidental runoff, to lands which have not been specifically described in this Order or in the ROWD, and for which valid waste discharge requirements are not in force are prohibited.
- B. Discharges of treated or untreated solid or liquid waste to waters of the United States are prohibited unless as authorized by a National Discharge Pollution Discharge Elimination System (NPDES) permit issued by the San Diego Water Board.
- C. Discharges of treated or untreated solid or liquid waste directly or indirectly to any surface waters of the State (including ephemeral streams and vernal pools) are prohibited to the extent permitted by federal law.
- D. The treatment, storage, or disposal of waste in a manner that creates pollution, contamination, or nuisance, as defined by Water Code section 13050, is prohibited to the extent permitted by federal law.

III. DISCHARGE SPECIFICATIONS

- A. The 30-day average daily dry weather flow to the SRTTP shall not exceed 7.5 mgd.
- B. Discharges of tertiary treated wastewater from the SRTTP shall not contain constituents in excess of the discharge specifications in Table 4:

Table 4. Discharge Specifications

Constituent	Units	Daily Maximum ¹	Monthly Average ²	Annual Average ³
Biological Oxygen Demand (BOD ₅ @20°C)	mg/L	45	30	
Total Suspended Solids (TSS)	mg/L	45	30	
pH	pH units	Within the limits of 6.5-9.0 at all times		
Sodium (Na) Hazard ⁴	%Na	60		
Total Dissolved Solids (TDS)	mg/L	-	-	750
Chloride (Cl)	mg/L	-	-	300
Sulfate (SO ₄)	mg/L	-	-	300
Total Nitrogen	mg/L	-	-	10
Iron (Fe)	mg/L	-	-	0.30
Manganese (Mn)	mg/L	-	-	0.05
Methylene Blue-Activated Substances (MBAS)	mg/L	-	-	0.5
Boron (B)	mg/L	-	-	0.6
Fluoride (F)	mg/L	-	-	0.7
Aluminum	mg/L	1.0	-	
Arsenic	mg/L	0.05	-	
Antimony	mg/L	0.006	-	
Barium	mg/L	1.0	-	
Beryllium	mg/L	0.004	-	
Cadmium	mg/L	0.005	-	
Cyanide	mg/L	0.2	-	
Mercury	mg/L	0.002	-	
Nickel	mg/L	0.1	-	
Selenium	mg/L	0.05	-	
Thallium	mg/L	0.002	-	
Perchlorate	mg/L	0.006	-	
<p>1 The daily maximum discharge specification shall apply to the results of a single composite or grab sample representing non-overlapping 24 hour periods.</p> <p>2 The monthly average discharge specification shall apply to the arithmetic mean of the results of all samples collected during each calendar month.</p> <p>3 The 12-month average discharge specification shall apply to the arithmetic mean of the results of all samples collected during a calendar year period</p> <p>4 See the Sodium Hazard Discharge Specification Alternative Compliance section below this table.</p>				

Sodium Hazard Discharge Specification Alternative Compliance. If the percent sodium value of the effluent exceeds 60 percent, compliance with the Sodium Hazard discharge specification may be evaluated by calculating the adjusted sodium adsorption ratio (SAR) and the electrical conductivity of the effluent. If the adjusted SAR and electrical conductivity values indicate that the degree or restriction on use of the effluent falls within or below the slight to moderate range as indicated in Basin Plan Table 3-1, the effluent will be in compliance with the sodium hazard discharge specification.

Adjusted SAR is calculated using the following equation:

$$SAR = \frac{Na}{\sqrt{\frac{(Ca_x + Mg)}{2}}}$$

Where *Na*, *Ca*, and *Mg* are in milliequivalents per liter.

Refer to Attachment E to this Order for *Ca_x* values.

- C. Recycled water produced from the SRTTP shall comply with the following additional requirements.
1. The chlorine disinfection process must provide a chlorine contact time (or CT)³ value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes, based on peak dry weather design flow.
 2. The median density of total coliform bacteria measured in the disinfected recycled water effluent from the Facility shall not exceed a Most Probable Number (MPN) of 2.2 organisms per 100 milliliters, utilizing the bacteriological results of the last seven days for which analyses have been completed; and the number of total coliform bacteria shall not exceed a MPN of 23 organisms per 100 milliliters in more than one sample in any 30-day period. No sample shall exceed an MPN of 240 total coliform bacteria per 100 milliliters.
 3. Turbidity measurement of the recycled water effluent from the SRTTP shall not exceed a daily average value of 2 Nephelometric Turbidity Units (NTU), shall not exceed 5 NTU more than 5 percent of the time during a 24-hour period, and shall not exceed 10 NTU at any time.
 4. Alternative disinfection processes may be used, that, when combined with the filtration process, have been demonstrated to reduce the concentration of plaque-forming units of F-specific bacteriophage MS2, or polio virus, per unit volume of water in the wastewater to one hundred thousandths (1/100,000) of the initial concentration in the filter influent throughout the range of qualities of wastewater that will occur during the recycling process. A virus that is at least as resistant to disinfection as polio virus may be used for purposes of the demonstration.

³ Defined as the product of total chlorine residual and modal contact time measured at the same point.

IV. WATER RECYCLING REQUIREMENTS

- A. The Discharger must develop and submit the following information to the San Diego Water Board, State Water Board Division of Drinking Water (DDW), and County of San Diego Department of Environmental Health (County DEH) upon request.
1. *Rules and Regulations for Recycled Water Users* (Rules and Regulations, Attachment B) governing the design and construction of recycled water use facilities and the use of recycled water. Rules and regulations for purveyance of recycled water shall, at a minimum, include the requirements which are contained in Attachment B to this Order.
 2. A program to conduct compliance inspections of recycled water reuse sites. Inspections shall determine the status of compliance with the Discharger's approved rules and regulations for recycled water users.
 3. A report containing the information listed below. The Discharger may submit a report that covers more than one reuse site. The report shall include a detailed description of each reuse site identifying all of the information below:
 - a. The number, location, and type of facilities within the use area proposing to use domestic and recycled water. "Facility" means any type of building or structure, or defined area of specific public use that utilizes or proposes to utilize a dual plumbed system.
 - b. The specific boundaries of the proposed use site area including a map showing the location of each facility, drinking water fountain and impoundment to be served.
 - c. The person or persons responsible for operation of the recycled water system at each use area.
 - d. The specific use to be made of the recycled water at each use area.
 - e. The methods to be used by the Discharger to assure that the installation and operation of the recycled system will not result in cross connections between the recycled water piping system and the potable water piping system. This shall include a description of pressure, dye, or other test methods to be used to test the system.
 - f. Plans and specifications. These shall include the following and shall be submitted to the DDW and County DEH:
 - i. Proposed piping system to be used.
 - ii. Pipe locations of both the recycled and potable systems.

- iii. Type and location of the outlets and plumbing fixtures that will be accessible to the public.
 - iv. The methods and devices to be used to prevent backflow of recycled water into the public water system.
 - v. Plan notes relating to recycled water specific installation and use requirements.
- B. Prior to providing recycled water to a new use site, the Discharger shall do the following:
1. Submit for review and approval a report certifying that the project conforms to all criteria described in Water Recycling Requirements IV.A.3. The certification report shall document that all criteria described in Water Recycling Requirements IV.A.3 has been submitted to and approved by the appropriate regulatory agency. Information submitted as a supplement to this report shall document compliance with any criteria, as described by Water Recycling Requirements IV.A.3, not met through submittal of the initial report.
 2. Ensure that any dual plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to title 22,⁴ California Code of Regulations, section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. The County DEH shall be notified at least 30 days prior to any cross connection test. A written report documenting the result of the inspection or testing for the prior year shall be submitted to the County DEH within 30 days following completion of the inspection or testing.
- C. The Discharger shall ensure the following requirements are met for all reuse sites:
1. Enforce recycled water rules and regulations.
 2. Conduct recycled water reuse site compliance inspections in accordance with the program submitted in compliance with Section IV.A.2 of this Order.
 3. Notify the DDW and the County DEH of any incidence of recycled water backflow into the potable water system as soon as possible, but in no case later than 24 hours after finding the incident.
 4. Maintain a current list of all on-site recycled water supervisors.

⁴ In this Order, the terms title 22 and title 23 are understood to refer to the California Code of Regulations from this point forward

5. The Discharger shall submit a report to the San Diego Water Board, the Division of Drinking Water (DDW), and the County of San Diego Department of Environmental Health (County DEH) prior to providing recycled water to any new reuse sites not identified in Order No. R9-2018-0023. The report shall include a detailed description of each reuse site and shall include the information below:
 - a. The number, location, and type of facilities within use areas.
 - b. The average number of persons estimated to be served by each facility on a daily basis.
 - c. The specific boundaries of the proposed use area including a map showing the location of each facility to be served.
 - d. The person or persons responsible for operation of the recycled water system at each facility.
 - e. The specific use to be made of the recycled water at each facility. Plan and specifications for new reuse sites and new dual-plumbed sites shall also be submitted to the DDW and the County DEH and shall include the following:
 - i. Proposed piping system to be used.
 - ii. Pipe locations of both the recycled and potable systems.
 - iii. Type and location of the outlets and plumbing fixtures that will be accessible to the public.
 - iv. The methods and devices to be used to prevent backflow of recycled water into the public water system.
 - v. Provide a domestic water supply well location in a map if the well is within 1,000 feet from the reuse area.
6. Prior to the initial operation of the dual-plumbed recycled water system and annually thereafter, the USMC shall ensure that the dual-plumbed system within each facility and use area is inspected for possible cross connections with the potable water system. The recycled water system shall also be tested for possible cross connections at least once every four years. The testing shall be conducted in accordance with the method described in the report submitted pursuant to title 22, section 60314. The inspections and the testing shall be performed by a cross connection control specialist certified by the California-Nevada section of the American Water Works Association or an organization with equivalent certification requirements. The County DEH shall be notified 30 days prior to any cross connection test. A written report documenting the result of the inspection or testing for the prior year

shall be submitted to the County DEH and DDW within 30 days following completion of the inspection or testing.

V. PROVISIONS

- A. The Discharger shall comply with all of the following Standard Provisions:
1. The Discharger must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the Water Code and is grounds for (a) enforcement action; (b) termination, revocation and reissuance, or modification of this Order; or (c) denial of a report of waste discharge in application for new or revised waste discharge requirements.
 2. The Discharger shall allow the San Diego Water Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to do the following:
 - a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this Order,
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order,
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this Order, and
 - d. Sample or monitor, at reasonable times for the purposes of assuring compliance with this Order or as otherwise authorized by the Water Code, any substances or parameters at any location.
- B. The Discharger shall report any noncompliance that may endanger health or the environment. Pursuant to section 5411.5 of the Health and Safety Code, any sewage overflow or spill shall be immediately reported to the California Office of Emergency Services (OES), and the County DEH to the extent permitted by federal law. In addition, any such information shall be provided orally to the San Diego Water Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the San Diego Water Board within 5 days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The San Diego Water Board may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

Discharger notifications and reporting for spills completed in compliance with Order No. R9-2013-0112 (NPDES Permit No. CA0109347 or revised or amended NPDES permit) shall be deemed as complying with the requirements of this section. In the event that the NPDES permit lapses then the Discharger shall comply with the following requirements:

The following occurrence(s) must be reported to the San Diego Water Board within 24 hours:

1. Any bypass from any portion of the treatment facility.
 2. Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge, or any other circumstances.
 3. Any treatment plant upset which causes the discharge specifications of this Order to be exceeded.
 4. Failure of chlorination equipment or loss of detectable chlorine residual.
 5. Disinfected tertiary effluent total coliform bacteria greater than 240 MPN/100mL.
 6. Any known direct cross-connection between recycled and potable water systems.
- C. The Discharger shall report all overflow events that occur at the SRTTP. For purposes of this reporting requirement, an overflow event is defined as a discharge of treated or untreated wastewater at a location onsite or other lands owned by the Discharger not authorized by waste discharge requirements which results from a pump station failure, line break, obstruction, surcharge, or any other operational dysfunction. Overflows of the kind identified under this provision shall be reported to the San Diego Water Board with the monthly monitoring report in which the overflow occurs.
- D. If the Discharger or end user, without regard to intent or negligence, causes or permits an unauthorized discharge of 50,000 gallons or more of recycled water that has been treated to at least disinfected tertiary recycled water⁵ or 1,000 gallons or more of recycled water that is treated at a level less than disinfected tertiary recycled water in or on any waters of the State, or causes or permits such unauthorized discharge to be discharged where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (1) that person has knowledge of the discharge, (2) notification is possible, and (3) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the San Diego Water Board in accordance with reporting requirements in Provision V.B.

⁵ Disinfected tertiary recycled water is defined in title 22, section 60301.230

- E. The incidental discharge of recycled water to waters of the State is not a violation of these requirements if the incidental discharge does not unreasonably affect the beneficial uses of the water, and does not result in the receiving water exceeding an applicable water quality objective.
- F. If a need for a discharge bypass is known in advance, the Discharger shall submit prior notice (stating, at a minimum, the purpose, anticipated dates, duration, level of treatment, and volume of bypass) and, if at all possible, the San Diego Water Board shall be made aware of such notice at least 10 days prior to the date of the bypass. "Bypass" means the intentional diversion of waste streams from any portion of the treatment facility other than a sewer system.
- G. The Discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
- H. Upon reduction, loss, or failure of the treatment facility the Discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies for example, when the primary source of power of the treatment facility has failed, is reduced, or is lost.
- I. Except for a discharge which is in compliance with this Order, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, shall as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the County DEH in accordance with Health and Safety Code section 5411.5 and the California Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Government Code title 2, division 1, chapter 7, article 3.7 (commencing with section 8574.17) to the extent permitted by federal law, and immediately notify the State Water Board or the San Diego Water Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of section 13271 of the Water Code unless the Discharger is in violation of a prohibition in the *Water Quality Control Plan for the San Diego Basin* (Basin Plan).
- J. Except for a discharge which is in compliance with this Order, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the California

Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Government Code title 2, division 1, chapter 7, article 3.7 (commencing with section 8574.1) to the extent permitted by federal law. This requirement does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Clean Water Act section 311, or the discharge is in violation of a Basin Plan prohibition, to the extent permitted by federal law.

- K. A copy of this Order shall be maintained at the Facility and shall be available to operating personnel at all times.
- L. The Discharger shall furnish to the San Diego Water Board, within a reasonable time, any information which the San Diego Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Discharger shall also furnish to the San Diego Water Board, upon request, copies of records required to be kept by this Order.
- M. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:
 - 1. Violation of any terms or conditions of this Order.
 - 2. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts.
 - 3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
 - 4. The Discharger may reduce or cease the discharge for any reason at any time and shall provide written notification of that action to the San Diego Water Board, DDW, and County DEH.
- N. The filing of a request by the Discharger for the modification, revocation, reissuance, or termination of this Order, or notification of planned changes or anticipated noncompliance does not stay any condition of this Order.
- O. The Discharger shall file a new ROWD, stamped and signed by a licensed professional,⁶ at least 120 days prior to the following:

⁶ All reports, plans, and documents required under this Order must be prepared under the direction of appropriately qualified professionals. California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. The lead professional shall sign and affix their license stamp to the report, plan, or document.

1. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the wastes.
 2. Significant change in the treatment or disposal method (e.g., change in the method of treatment which would significantly alter the nature of the waste).
 3. Change in the disposal area from that described in the findings of this Order.
 4. Increase in flow beyond that specified in this Order.
 5. Other circumstances that result in a material change in character, amount, or location of the waste discharge.
 6. Any planned change in the regulated facility or activity which may result in noncompliance with this Order.
- P. This Order is not transferable to any person except after notice to the San Diego Water Board. This notice must be in writing and received by the San Diego Water Board at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Discharger containing a specific date for the transfer of this Order's responsibility and coverage between the current Discharger and the new discharger. This agreement shall include an acknowledgement that the existing Discharger is liable for violations up to the transfer date and that the new discharger is liable from the transfer date on and forward. The San Diego Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the Water Code.
- Q. Where the Discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the San Diego Water Board, it shall promptly submit such facts or information.
- R. All applications, reports, or information submitted to the San Diego Water Board shall be signed and certified as follows:
1. The ROWD shall be signed as follows:
 - a. By the Commanding Officer of Marine Corps Base Camp Pendleton; or
 - b. By direction of the person designated in paragraph "a" of this provision, only if:
 - i. The authorization is made in writing by a person described in paragraph R.1.a of this provision;

- ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 2. All other reports required by this Order and other information required by the San Diego Water Board shall be signed by a person designated in paragraph (R.1) of this provision or a duly authorized representative of that person. An individual is a duly authorized representative only if all of the following are true:
 - a. The authorization is made in writing by a person described in paragraph b.
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.
 - c. The written authorization is submitted to the San Diego Water Board.
 3. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment."
- S. The Discharger shall submit reports required under this Order in text searchable PDF format to the San Diego Water Board via email. The email submittals must include a signed cover/transmittal letter (with the facility name, facility contact information, and reference code), and, unless directed otherwise by the Executive Officer, be sent via email to sandiego@waterboards.ca.gov.

VI. SPECIAL PROVISIONS: FACILITY DESIGN AND OPERATION SPECIFICATIONS.

- A. The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order.

- B. The Discharger must implement the following to ensure that recycled water and fertilizer are applied in use sites at agronomic rates:⁷
1. Monitor nutrient concentrations in recycled water supplies and notify recycled water site supervisors of the nutrient concentrations of recycled water. In the case of recycled water fill stations, customers must be notified of the nutrient concentrations in the recycled water.
 2. Conduct periodic inspections of end use sites.
- C. Prior to any changes in the treatment facilities, the Discharger shall prepare an engineering report conforming to title 22, section 60323. The engineering report shall be submitted to the DDW, County DEH, and San Diego Water Board for review and response.
- D. A copy of the facility operations manual shall be maintained at the plant and shall be available to operation personnel and San Diego Water Board staff at all times. The following portions of the operations manual shall be posted at the treatment plant as a quick reference for treatment plant operators.
1. Alarm set points for secondary turbidity, tertiary turbidity, and chlorine residual.
 2. Levels at which flow will be diverted for secondary turbidity, tertiary turbidity, and chlorine residual.
 3. When to divert flow for high daily and weekly median total coliform.
 4. When the authorities (DDW, County DEH, San Diego Water Board) will be notified of a diversion.
 5. Names and numbers of those authorities to be notified in case of a diversion.
 6. Frequency of calibration for turbidity meters and chlorine residual analyzers.
- E. The Facility shall be supervised and operated by persons possessing certificates of appropriate grade pursuant to title 23, chapter 3, subchapter 14.
- F. All waste treatment, storage and purveyance facilities shall be protected against 100- year peak stream flows as defined by the County of San Diego, Department of Public Works, Flood Control Section.

⁷ Agronomic rates refers to rate of application of recycled water to plants necessary to satisfy the plants' evapotranspiration requirements, considering allowances for supplemental water (e.g., effective precipitation), irrigation distribution uniformity, and leaching requirement, thus minimizing the movement of nutrients below the plants' root zone.

- G. All wastewater and recycled water storage facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm.
- H. The Discharger shall consult with the U.S. Environmental Protection Agency (USEPA) and ensure that all project-related recycled water injection or disposal wells are in compliance with USEPA's underground injection program for Class V disposal wells.⁸
- I. The Discharger shall comply with the Monitoring and Reporting Program (Attachment D to Order No. R9-2018-0023) and future revisions thereto as specified by the San Diego Water Board. Monitoring results shall be reported at the frequency specified in Monitoring and Reporting Program No. R9-2018-0023.
- J. The Discharger shall cease the discharge, if the compliance monitoring wells located hydrologically upgradient from the Ysidora Flats injection site or in the shallow aquifer (Figure A-3) indicate that annual average concentrations of total nitrogen are above 5 mg/L or NDMA⁹ above DDW notification levels. The annual average concentration shall be calculated based on the calendar year. The groundwater quality objective for nitrate is 45 mg/L which is equivalent to a total nitrogen concentration of 10 mg/L.
- K. The Discharger has no plans to install potable water supply wells in the Lower Ysidora Subbasin. If the Discharger decides to construct future potable water supply wells and develop potable groundwater supplies in the Lower Ysidora Subbasin, then the following tasks need to be completed:
1. At least a 90-day written notification to DDW and the San Diego Water Board of the Discharger's intent to install potable water supply wells in the Lower Ysidora Subbasin;
 2. Provide the DDW and San Diego Water Board a written work plan for the installation of the proposed well(s) and incorporate any modifications/conditions into the revised work plan, as required by the DDW or San Diego Water Board;

The work plan shall include a proposed schedule for testing/monitoring and reporting of analytical results from groundwater produced by the well(s); and
 3. Obtain any required permits for well design/construction from the USEPA, San Diego County Department of Environmental Health and/or Department of Water Resources.

⁸ Federal Requirements for Class V wells: <https://www.epa.gov/uic/federal-requirements-class-v-wells>

⁹ N-nitrosodimethylamine (NDMA) notification level is 0.00001 mg/L.

VII. NOTIFICATIONS

- A. The San Diego Water Board may initiate enforcement action against the Discharger, which may result in the termination of the recycled water discharge, if any person uses, transports, or stores such water in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050, to the extent permitted by federal law.
- B. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, State or local laws, nor create a vested right for the Discharger to continue the waste discharge.
- C. These requirements have not been officially reviewed by the United States Environmental Protection Agency and are not issued pursuant to Clean Water Act section 402.
- D. Any person aggrieved by this action of the San Diego Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or State holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
- E. This Order becomes effective on the date of adoption by the San Diego Water Board.

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ATTACHMENT A: LOCATION MAPS

FIGURE A-1. PROJECT ALIGNMENT AND YSIDORA FLATS INJECTION WELL ZONE AND RED BEACH INJECTION WELLS

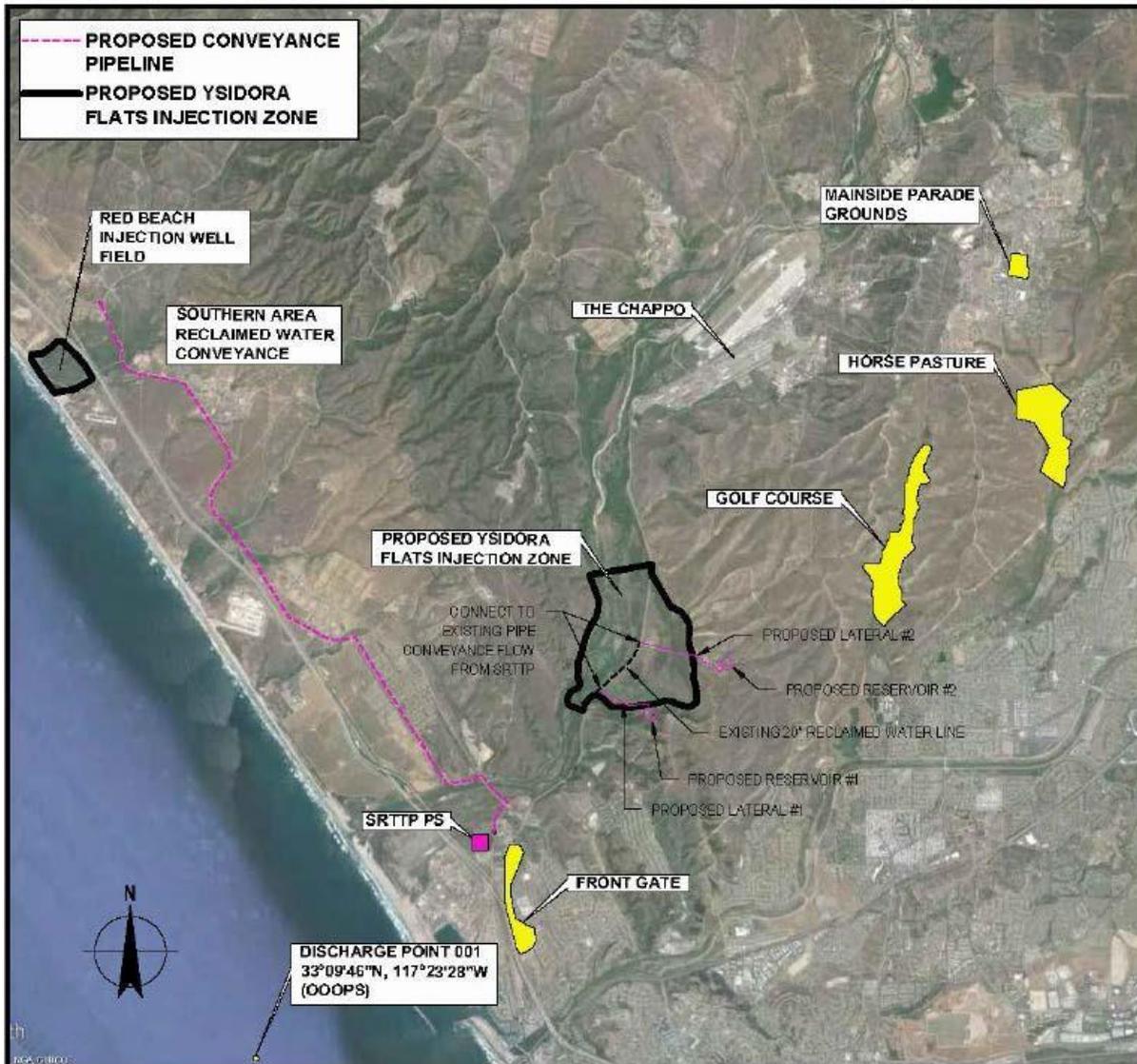
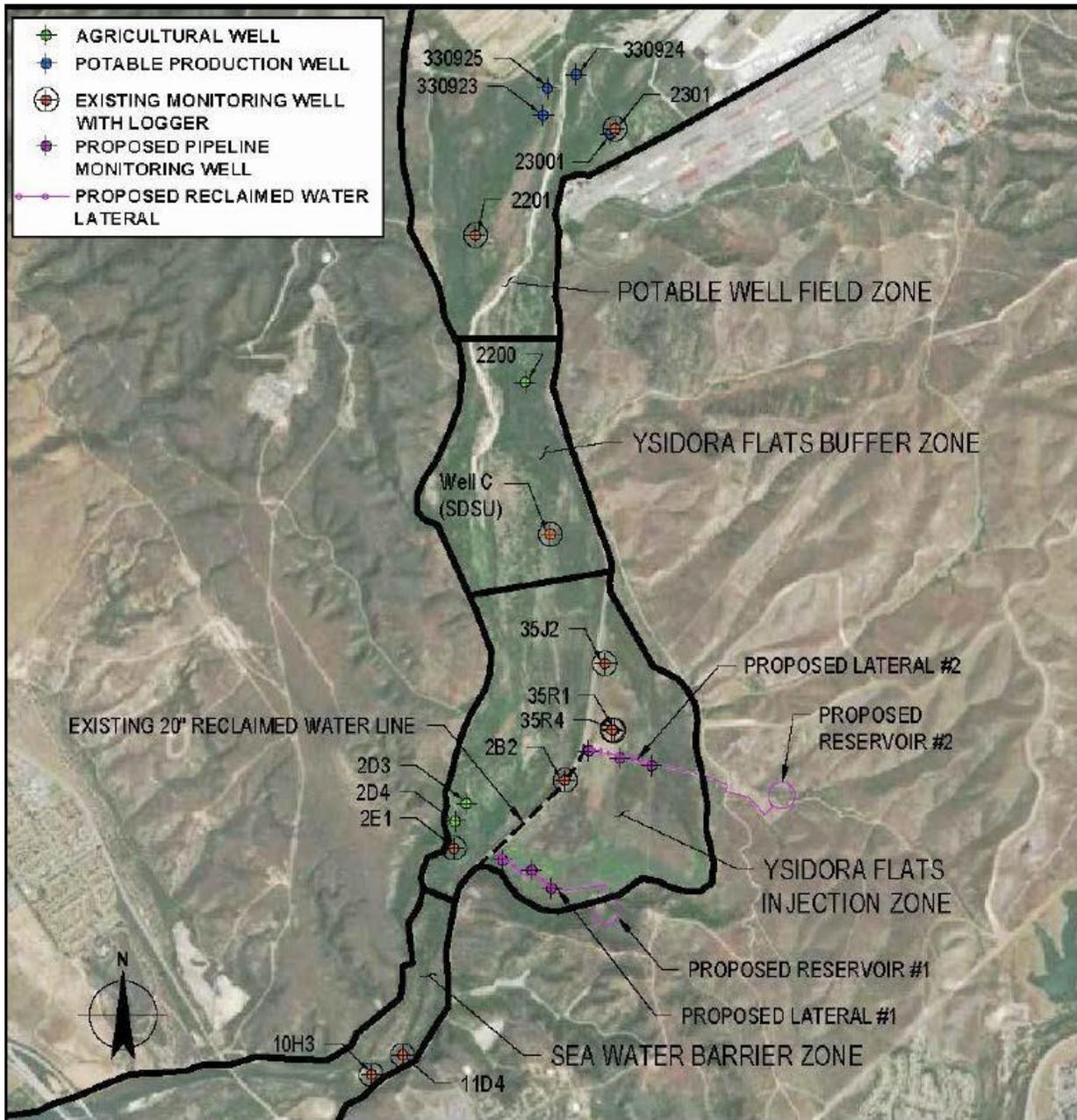


FIGURE A-2. EXISTING RED BEACH INJECTION WELLS: CURRENTLY OPERATING UNDER ORDER NO. 98-04



FIGURE A-3. PROPOSED YSIDORA WATER QUALITY ZONES



ATTACHMENT B - RULES AND REGULATIONS FOR RECYCLED WATER USE

Pursuant to Water Code Section 13523.1(b)(3), this Order requires the Discharger to establish and to enforce rules and regulations governing the design, construction and use of recycled water distribution and disposal systems by its customers. The rules and regulations shall be consistent with the following criteria:

- Title 22, California Code of Regulations, division 4, chapter 3, Wastewater Reclamation Criteria;
- Title 17, California Code of Regulations, division 1, chapter 5, group 4, article 1 and 2;
- The State Water Board Division of Drinking Water (DDW) *Guidelines For Use of Recycled Water, Guidelines for Use of Recycled Water for Construction*; and
- Any measures that are deemed necessary for protection of public health, such as the American Water Works Association (AWWA) California/Nevada Section, *Guidelines for the Distribution of Non-Potable Water and Guidelines for Retrofitting to Recycled Water* or alternate measures that are acceptable to the DDW.

I. STANDARD RULES AND REGULATIONS

At a minimum, the rules and regulations shall notify the users that:

- A. The use of recycled water shall not cause a condition of pollution, contamination or nuisance, as defined by Water Code Section 13050. The Discharger, the San Diego Water Board, the DDW, and the County Department of Environmental Health (County DEH), or an authorized representative of these parties, upon presentation of proper credentials, shall have the right to enter upon the recycled water use site during reasonable hours, to verify that the user is complying with the Discharger's rules and regulations.
- B. The recycled water user shall provide written notification, in a timely manner, to the Discharger of any material change or proposed change in the character of the use of recycled water.
- C. Prior to the initiation of recycled water service, the recycled water user shall submit to the Discharger plans and specifications for recycled water distribution facilities.
- D. The recycled water user shall designate an on-site recycled water supervisor who is responsible for the recycled water system at each use area under the user's control. Specific responsibilities of the recycled water supervisor include the proper installation, operation, and maintenance of the irrigation system; compliance of the project with the Discharger's rules and regulations, prevention of potential hazards and preservation of the recycled water distribution system plans in "as built" form. Designated recycled water supervisors shall obtain instruction in the use of recycled water from an institution approved by the DDW and County DEH, as required.

- E. The Discharger may terminate service to a recycled water user who uses, transports, or stores such water in violation of the Discharger's rules and regulations.
- F. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year, 24-hour frequency storm unless the San Diego Water Board approves relaxed storm protection measures for the facility.
- G. All recycled water storage facilities owned and/or operated by recycled water users shall be protected against 100-year frequency peak stream flows as defined by the San Diego County flood control agency unless the San Diego Water Board approves relaxed storm protection measures for the facility.
- H. The San Diego Water Board may initiate enforcement action against any recycled water user who discharges recycled water in violation of any applicable discharge requirement prescribed by the San Diego Water Board or in a manner which creates or threatens to create conditions of pollution, contamination or nuisance, as defined in Water Code section 13050.
- I. A copy of the recycled water rules and regulations, irrigation system layout map, and a recycled water system operations manual shall be maintained at the use area. These documents shall be available to operating personnel at all times.
- J. Irrigation with disinfected tertiary recycled water shall not take place within 50 feet of any domestic water supply well unless all of the following conditions have been met:
 - 1. A geological investigation demonstrates that an aquitard exists at the well between the uppermost aquifer being drawn from and the ground surface.
 - 2. The well contains an annular seal that extends from the surface into the aquitard.
 - 3. The well is housed to prevent any recycled water spray from coming into contact with the wellhead facilities.
 - 4. The ground surface immediately around the wellhead is contoured to allow surface water to drain away from the well.
 - 5. The owner of the well approves of the elimination of the buffer zone requirement.
- K. Impoundment of disinfected tertiary recycled water shall not occur within 100 feet of any domestic water supply well.

- L. Irrigation with, or impoundment of, disinfected secondary-2.2¹ or disinfected secondary -23² recycled water shall not take place within 100 feet of any domestic water supply well.
- M. Irrigation with, or impoundment of, undisinfected secondary recycled water shall not take place within 150 feet of any domestic water supply well.
- N. Recycled water facilities shall be operated in accordance with best management practices (BMPs) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMPs shall be implemented that will minimize both public contact and discharge onto areas not under customer control.
- O. Irrigation with recycled water shall be during periods of minimal human use of the service area. Consideration shall be given to allow a maximum dry-out time before the irrigated area will be used by the public.
- P. All drinking fountains located within the approved use area shall be protected by location and/or structure from contact with recycled water spray, mist, or runoff. Protection shall be by design, construction practice, or system operation.
- Q. Facilities that may be used by the public, including but not limited to eating surfaces and playground equipment and located within the approved use areas, shall be protected to the maximum extent possible by siting and/or structure from contact by irrigation with recycled water spray, mist, or runoff. Protection shall be by design, construction practice or system operation.
- R. Spray irrigation with recycled water, other than disinfected tertiary recycled water, shall not take place within 100 feet of the property line of a residence or a place where public exposure could be similar to that of a park, playground, or school yard.
- S. All use areas where recycled water is used and that are accessible to the public shall be posted with conspicuous signs, in a size no less than 4 inches by 8 inches, that include the following wording in a size no less than 4 inches high by 8 inches wide: "RECYCLED WATER - DO NOT DRINK". The sign(s) shall be of a size easily readable by the public.
- T. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.
- U. The recycled water piping system shall not include any hose bibs. Quick couplers that are different from that used on the potable water system may be used.

1 Disinfected secondary-2.2 recycled water is defined in title 22, Cal. Code Regs., section 60301.220

2 Disinfected secondary-23 recycled water is defined in title 22, Cal. Code Regs., section 60301.225

- V. The public water supply shall not be used as a backup or supplemental source of water for a recycled water system unless the connection between the two systems is protected by an air gap separation which complies with the requirements of sections 7602(a) and 7603(a) of the California Code of Regulations, title 17 and the approval of the public water system has been obtained. If a "Swivel-ell" type connection is used it must be used in accordance with the provisions of the CDPH (now DDW) Policy Memo 95-004. Approved backflow prevention devices shall be provided, installed, tested, and maintained by the recycled water user in accordance with the applicable provisions of Cal. Code of Regs. title 17, division 1, chapter 5, group 4, article 2.
- W. No person other than the Discharger shall make a connection to the recycled water distribution system.
- X. All recycled water piping and appurtenances in new installations and appurtenances in retrofit installations shall be colored purple or distinctively wrapped with purple tape in accordance with the Health and Safety Code, chapter 7.9, section 4049.54.
- Y. Reuse site shut down tests and inspections shall be monitored by the DDW.
- Z. Customer complaints concerning recycled water use that may involve public illness shall be reported to the County DEH, the DDW and to the Discharger who shall maintain a log of all customer complaints regarding recycled water.
- AA. Any backflow prevention device installed to protect the public water system shall be inspected and maintained in accordance with title 17, section 7605.
- BB. Recycled water and fertilizer shall be applied to landscapes at agronomic rates.
- CC. Overwatering of landscapes and runoff shall be avoided.
- CC. Recycled water supervisors shall be responsible for determining onsite fertilizer needs to ensure that recycled water is applied to landscapes at agronomic rates, and shall complete training and education in compliance with recycled water agency rules and regulations to: (1) Minimize the potential for runoff or over-irrigation and, (2) Determine the fertilizer needs of the landscape taking into account the nutrient value of recycled water.

II. GENERAL REQUIREMENTS FOR HAULING OR TRANSPORTATION OF RECYCLED WATER USING VEHICLES

The Discharger's updated Rules and Regulations for Recycled Water Use must include requirements that will be implemented to ensure use and transport of recycled water from the fill stations will be protective of public health and the environment. At a minimum the Rules and Regulations must include the requirements below.

The Discharger or hauler must comply with the following requirements in sections II-IV of Attachment B to this Order, unless the DDW or the County DEH determine that

alternative criteria provide equivalent or better protection of public health and the environment.

- A. Haulers interested in participating in this program must apply for a Recycled Water Use Permit issued by the Discharger.
- B. Use areas receiving hauled recycled water must follow the same title 17 and title 22 requirements as a similar use area receiving traditionally piped recycled water. These requirements must be addressed in the Discharger's permitting process.
- C. Before trucks or containers can be filled for the first time, all haulers are required to attend a brief on-site orientation or training in order to learn about using the filling station and the proper handling and safe use of recycled water. Annual refresher training should be required. Records of training should be maintained by the Discharger.
- D. Once the hauler completes the on-site orientation or training and a MRP Recycled Water Program inspector verifies the tanker truck or containers meet the recycled water use requirements, the inspector will issue a signed Recycled Water Use Permit. The Recycled Water Use Permit must be available for inspection at all times. The hauler must carry a copy in the vehicle at all times while hauling recycled water.
- E. Recycled water must not be introduced into any potable water piping system and no connection shall be made between the tank and any part of a potable water system.
- F. If the hauler requests to supply recycled water to a use area that uses any plumbed potable or recycled water distribution systems, the Discharger must follow all applicable title 17 and tile 22 regulations, including cross connection control testing and backflow prevention device installation prior to allowing pick up of recycled water. Dual plumbed use areas can only receive recycled water from a recycled water agency as specified in title 22, section 60313(a).
- G. The hauler should keep a log book for each vehicle, tank, or container used to transport recycled water. The log book must be available for inspection at all times. The hauler must carry a copy in the vehicle at all times while hauling recycled water. The log book should include:
 - 1. Date of delivery/use,
 - 2. Volume of water delivered/used,
 - 3. Intended use of water,
 - 4. Name and address of the recipient/customer.
- H. The hauler or Recycled Water Site Supervisor must notify workers and the public recycled water is used at a site and inform workers and the public not to drink recycled water or use it for food preparation.

- I. Precautions should be taken to avoid food coming in contact with recycled water while the use site is wet.
- J. No irrigation or impoundment of recycled water is allowed within a minimum of 50 feet of any domestic drinking water well.
- K. The haulers shall take adequate measures to prevent overspray, ponding, or run off of recycled water from the authorized recycled water use area.
- L. No connection shall be made between a tank or container of recycled water and any part of a potable water system.
- M. The Recycled Water Use Permit issued by the Discharger must be available for inspection at all times.
- N. Recycled water must not be introduced into any potable water piping system and no connection shall be made between the tank and any part of a potable water system.
- O. Tank trucks, containers, and appurtenances must be clearly identified as “non-potable”, equipped with a legally sized air gap, and must not be used to provide potable water. Containers and hoses associated with hauling recycled water must not be used for potable water. Commercial hauling trucks that may be filled with potable water for non-potable uses must have two separate filling systems, one dedicated to potable water and one dedicated to recycled water. When the truck is filled from a potable water source, there must be a water agency or municipality provided meter and backflow device between the truck fill line and the potable source.
- P. Vehicles, tanks, and containers must have water-tight valves and fittings, must not leak or spill contents during transport, and are cleaned of contaminants. This must be checked by the hauler before each use. Water-containing vessels that are open to the atmosphere during hauling are not acceptable for use.
- Q. Haulers should not overfill containers or trucks.
- R. Hoses used for the application of recycled water shall be removable and shall be stored in a disconnected condition during transport. Hoses should be inspected prior to filling to ensure that they are in serviceable condition and free from leaks.
- S. In the event of an emergency concerning the recycled water hydrant, meter, fill pipe or hose (spillage, leaks, etc.), the hauler should call the emergency contact number listed on the filling station sign for further instructions.
- T. The Discharger may conduct use area visits to ensure proper use of recycled water according to all applicable requirements of titles 17 and 22 and Recycled Water Use Permit conditions. This may include follow up phone calls or surveys of end users about completion of the hauling process and recycled water application.

- U. Conditions under which haulers may lose their permits should be clarified. Including failure to follow program requirements and/or adhere to applicable State, County or local codes will result in suspension of the haulers permit. Violations of such codes may also result in fines and applicable administrative fees.
- V. Residential hauling programs shall have fill stations staffed at all times by a representative from the Discharger. This is to ensure proper handling and filling procedures are being conducted at the fill stations.
- W. Residential hauling programs should limit onetime hauls to 300 gallons.
- X. The permitted hauler shall notify the Discharger prior to using recycled water for a use not approved by the Discharger.
- Y. The Discharger, San Diego Water Board, DDW, and County DEH will have the right to enter any recycled water use site during reasonable hours to ensure the user is complying with these requirements and the Discharger's Rules and Regulations for Recycled Water Use.

III. RULES AND REGULATIONS FOR HAULING OR TRANSPORTATION OF RECYCLED WATER FROM COMMERCIAL VEHICLE FILL STATIONS

- A. Trucks hauling recycled water that may also be filled with potable supplies for non-potable purposes shall have a dedicated potable use fill line through an air gap separation. The fill lines shall be properly labeled as potable or recycled water. As an alternative, the water supplier may install a reduced pressure principle backflow device on the potable system for filling trucks with potable water. Vehicles used to transport recycled water shall not be used to carry water for potable purposes.
- B. The risers, hoses, and fittings for each supply shall be color coded (painted), blue for potable and purple for recycled water.
- C. The hoses, hydrants and risers for each supply shall have separate and unique fittings (e.g., 2-1/2 inch diameter on the potable system and 2 inch diameter on the recycled water system) such that the potable system cannot accidentally be used on the recycled system and vice versa.
- D. All vehicles used in transporting recycled water must be clearly marked with typical signage that reads: "CAUTION: RECYCLED WATER - DO NOT DRINK" in English and Spanish. The Discharger shall conduct annual inspections of the trucks to assure that all requirements in this Order are being met and that recycled water is being used in compliance with the requirements of this Order.
- E. Vehicles used for transportation or distribution of recycled water, or for street sweeping must be equipped with an air gap to ensure backflow protection.

- F. The use of recycled water for street sweeping or construction shall comply with the appropriate local storm water ordinance. Typical compliance measures include preventing overspray, ponding, or runoff of recycled water from the use area.
- G. Haulers shall be required to enter the date and amount collected on the fill station log sheet during each visit. Include locations the recycled water will be used and approximate amounts.
- H. For Hydrant Meter Filling Stations ensure the meter is shut off before disconnecting the fill line and make sure no water is leaking from the meter or hydrant.
- I. For Gate Access Filling Stations ensure no water is leaking from the fill pipe or hose and securely re-lock the gate after leaving the filling station.
- J. A truck or tank that has contained material from a septic tank or cesspool shall not be used to contain or distribute recycled water.

IV. RULES AND REGULATIONS FOR USE OF RECYCLED WATER FOR FIRE FIGHTING

- A. Unused recycled water must not be released into streams, rivers, or waterways.
- B. Fire hydrants supplied with recycled water must be clearly identified by purple paints, signs, tags, stencils, or other such labeling, in order to notify firefighters that the fire hydrants are supplied with recycled water.
- C. Fire truck tanks must be disinfected following the use of recycled water for firefighting since fire trucks could be used to distribute drinking water during civil emergencies.
- D. Firefighting personnel must be adequately trained in safe use of recycled water. New and current firefighting personnel must receive periodic refresher courses regarding proper handling and use of recycled water.

ATTACHMENT C: INFORMATION SHEET ORDER NO. R9-2018-0023

MASTER RECYCLING PERMIT

FOR THE UNITED STATES MARINE CORPS BASE CAMP PENDLETON, SOUTHERN REGIONAL TERTIARY TREATMENT PLANT, SAN DIEGO COUNTY

This Information Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of Order No. R9-2018-0023 (Order), and directives in Monitoring and Reporting Program No. R9-2018-0023 (MRP). The Information Sheet contains background information and rationale for MRP directives. The Information Sheet is hereby incorporated into and constitutes findings for this Order and MRP.

I. INTRODUCTION

The Order establishes WDRs for the production, distribution, use, and disposal of recycled water from the Southern Regional Tertiary Treatment Plant (SRTTP), and serves as a Master Recycling Permit. The SRTTP has been regulated under Order No. R9-2009-0021 and addendum, *Master Reclamation Permit for Southern Region Tertiary Treatment Plant, United States Marine Corps, Camp Pendleton, San Diego County*. The Order is an updated Master Recycling Permit for the SRTTP. This Order adds the following:

- a. Adds the Red Beach disposal area;
- b. Permits the injection of recycled water via a well field at the Ysidora Flats area that is intended to function as a seawater intrusion barrier;
- c. Raises the effluent discharge specification for total nitrogen from 5 to 10 mg/L;
- d. Establishes discharge specifications for TDS, chloride, and sulfate at their respective groundwater quality objectives for the Ysidora Hydrologic Area;
- e. Requires the *Rules and Regulations for Recycled Water Use* to be updated; and
- f. Adds requirements of the State *Recycled Water Policy*.

The MRP (Attachment D) requires the Discharger to furnish monitoring reports to demonstrate compliance with the WDRs in the Order. The San Diego Water Board developed the WDRs in the Order and directives in the MRP based on information in the report of waste discharge, monitoring reports, water quality control plans and policies, and other available information.

For the purposes of this Order, references to the “discharger” in applicable State laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

- A. The discharge of disinfected tertiary treated recycled water from the SRTTP will occur in the following hydrologic areas (HA);
- San Onofre HA (901.50) of the San Juan Hydrologic Unit (HU). The discharge consists of the proposed disposal of recycled water via the Red Beach injection well field. The discharge location is west of Interstate 5 where no beneficial uses of groundwater exist;
 - Ysidora HA (902.10) of the Santa Margarita HU. Discharges will occur at irrigation reuse sites and at the proposed Ysidora Flats injection wells to create a seawater intrusion barrier;
 - Mission HSA (903.11) of the San Luis Rey HU. Discharges will occur at irrigation reuse sites; and
 - MCBCP. Recycled water from fill stations can be used throughout MCBCP for uses specified in the minimum Rules and Regulations (Attachment B).
- B. The California Legislature has declared that a substantial portion of the future water requirements of the State may be economically met by beneficial use of recycled water (Water Code, section 13511). The Legislature also expressed its intent that the State under take all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the State. (Water Code, section 13512). The Order is consistent with the legislature's declaration because it facilitates the use of recycled water in place of potable water supplies.
- C. The State *Recycled Water Policy*¹ promotes the use of recycled water to achieve sustainable local water supplies and reduce greenhouse gas emissions. This Order is consistent with the *Recycled Water Policy* because it requires the USMC to conduct priority pollutant monitoring, implement nutrient management measures, and to implement a salt and nutrient management plan for the Lower Santa Margarita groundwater basin.

Recycled water use can help to reduce the scarcity of local water supplies. It is not the only option for bringing supply and demand into a better balance, but it is a viable cost effective solution that is appropriate in many cases. The feasibility of recycled water use depends on local circumstances, which affect the balance of costs and benefits. In drought conditions, recycled water can be particularly valuable given the scarcity of alternative potable water supplies. In normal precipitation years recycled water use may reduce groundwater extraction. Broader and more effective uses of recycled water are consistent with the goals and objectives of the Recycled Water Policy and the San Diego Water Board's Practical Vision strategy for

¹ https://www.waterboards.ca.gov/water_issues/programs/water_recycling_policy/policy.html.

achieving a sustainable local water supply.²

- D. The Order retains provisions for the safe transport and use of recycled water from possible future recycled water fill stations. If the Discharger chooses to establish recycled water fill stations, the Order requires the Discharger to amend its *Rules and Regulations for Recycled Water Use* and implement measures to ensure that the use and transport of recycled water from the fill stations complies with the Uniform Statewide Recycling Criteria, and is protective of public health and the environment.

I. FACILITY DESCRIPTION

- A. **Description of Southern Regional Tertiary Treatment Plant.** The SRTTP provides secondary and tertiary treatment of domestic wastewater generated in the southern portion of Camp Pendleton. The preliminary treatment consists of two bar screens prior to the influent pump station and drum screens. Secondary treatment consists of six sequencing batch reactors (SBRs). The SBRs operate in four different sequences or steps which are fill, react, settle, and decant. The only sequence which receives compressed air is the react sequence. The tertiary treatment processes consist of four disk filters and a chlorine contact basin. Associated solids handling processes consist of three aerobic digesters, a gravity belt thickener, and centrifuges. The SRTTP currently has a 30-day average dry weather influent flow limit of 7.5 million gallons per day (mgd) for the secondary treatment processes.
- B. **Recycled Water Use.** Recycled water produced at the SRTTP will continue to serve the existing irrigation sites at Camp Pendleton shown in yellow on Attachment A. In addition to the existing irrigation sites, the USMC intends to inject recycled water produced from the SRTTP into the Ysidora Basin in the Ysidora Flats area to create a seawater intrusion barrier. This project consists of pumping recycled water to two 75,000-gallon reservoirs located in the Ysidora Flats area (see Attachment A, page A- 1). The two reservoirs will then drain by gravity to injection wells located in the Ysidora Groundwater Basin. The injection well system will function as a barrier to prevent seawater intrusion into, and improve water quality in the Ysidora Basin; and protect potable supply wells located in the Chappo Subbasin. The injection well field is approximately 2.5 miles down-gradient from the potable well field. The Discharger proposes to reuse between 435 to 870 acre-feet per year of disinfected tertiary recycled water from the SRTTP to create the seawater intrusion barrier. The recycled water will be injected at a depth between 80 and 195 feet below ground surface, within the Lower Ysidora alluvial aquifer in the Lower Ysidora Subbasin of the Santa Margarita River Watershed. The seawater intrusion barrier system includes 16 injection wells and two additional monitoring wells located in the Ysidora Flats area in the Lower Ysidora Hydrologic Subarea. The seawater intrusion barrier was proposed in the *Salt and Nutrient Management Plan for the Santa Margarita Basin*. The USMC was the primary stakeholder that developed the plan.

² See Practical Vision for “Strategy for Achieving a Sustainable Local Water Supply” http://www.waterboards.ca.gov/sandiego/water_issues/Practical_Vision/index.shtml

The Order updates the minimum requirements in Rules and Regulations for Recycled Water Use (Attachment B) to include requirements for the transport and use of water from recycled water fill stations. Recycled water transported from fill stations may be used for the following purposes:

- Street sweeping and cleaning of sidewalks and outdoor work areas.
- Dust control, soil compaction, and construction.
- Sewer flushing and pressure testing of newly constructed tertiary recycled water pipelines, sewer force main pipelines, and gas pipelines.
- Irrigation of commercial and residential landscapes, crops, and nursery stock.
- Fire protection.
- Other uses approved in California Code of Regulations title 22³ upon receiving approval from the State Water Resources Control Board (State Water Board) Division of Drinking Water (DDW).

The Order also allows the USMC to construct dual plumbed facilities in approved HAs after obtaining the necessary approvals from the County DEH and DDW

- C. **Disposal.** The USMC intends to dispose of excess recycled water by injecting it into the ground through the existing Red Beach injection wells (see location map in Attachment A). These wells are used to dispose of treated wastewater from Sewage Treatment Plant No. 9 under Order No. 98-04. The USMC can also dispose of unused recycled water through the Oceanside Ocean Outfall via the Oceanside Ocean Outfall Pump Station pursuant to National Pollutant Discharge Elimination System Permit No. CA010347, Order No. R9-2013-0112.
- D. **Plant Effluent Quality.** Table 2 shows the average annual concentrations of selected chemical constituents in effluent samples collected between 2012 and 2015. The constituents shown below are those that must be reported in the annual monitoring reports required by Monitoring and Reporting Program No. R9-2009-0021.

The USMC recently upgraded the drinking water facilities at MCBCP by adding the Advanced Water Treatment Plant (AWT), which began operations on December 1, 2013. The upgrades include reverse osmosis treatment, which will reduce the concentration of TDS in the potable water supply, thereby decreasing the influent concentration to the SRTTP. However, the AWT was taken offline from February 16, 2016 until July 13, 2017, to complete repairs to the reverse osmosis membranes. The effects on TDS effluent quality of operating the AWT, and taking it offline are evident in Table 1.

³ In this Information Sheet, the term title 22 is understood to refer to the California Code of Regulations from this point forward.

Table 1. Effluent Quality (units in milligrams per liter)

Year	TDS	Cl	SO ₄	Fe	Mn	B	F	Total Nitrogen
2012	1,119	347	236	0.10	0.02	0.41	0.32	1.92
2013	846	270	180	0.10	0.06	0.42	0.24	2.28
2014	696	241	112	0.10	0.03	0.41	0.13	1.61
2015	678	215	99	0.10	0.02	0.40	0.12	3.13
2016	1,036	269	232	0.10	0.01	0.36	0.24	3.10

End Notes for Table 1:

Notes: TDS = Total Dissolved Solids, Fe = Iron, Mn = Manganese, B = Boron , Cl- = Chloride, Fl- = Fluoride, SO₄ = Sulfate.

II. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

- A. **Legal Authorities.** This Order is issued pursuant to sections 13263 and 13523.1 of the Water Code. This Order serves as a Master Recycling Permit, which also includes Waste Discharge Requirements (WDRs) issued pursuant to article 4, chapter 4, division 7 of the Water Code.
- B. **California Environmental Quality Act.** The San Diego Water Board is the lead agency under the California Environmental Quality Act (CEQA) for the adoption of this Master Recycling Permit. The environmental impacts associated with the project were originally analyzed by the USMC in an Environmental Impact Statement (EIS). However, a Supplemental Environmental Assessment (SEA) was prepared to include findings of a recent water study conducted as part of the Base Recycled Water Master Plan. The study found that there is a greater demand for recycled water use in the southern areas of Marine Corps Base Camp Pendleton than in the northern areas. The specific environmental impacts associated with the project were further addressed in a Continuing Environmental Review Statement (CERS).

The environmental documents referenced above were prepared in accordance with the National Environmental Policy Act. Therefore, the San Diego Water Board prepared an Addendum to the EIS and SEA to evaluate environmental impacts associated with greenhouse gas emissions, population inducement, and mitigation measures to satisfy the requirements of CEQA.

As the lead agency under CEQA, the Board considered the EIS, SEA, CERS, and Addendum to the EIS and SEA, and the project's environmental effects as described in those documents. The Board concurs that the project will not have a significant impact on the environment.

- C. **Water Quality Control Plans.** The *Water Quality Control Plan for the San Diego Basin* (hereinafter Basin Plan) designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan

implements State Water Board Resolution No. 88-63, which established State policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. This Order implements the Basin Plan by prescribing requirements for the production, reuse, and disposal of recycled water that will not adversely impact water quality, beneficial uses, human health, or the environment.

- D. **Recycled Water Policy.** The *Recycled Water Policy* establishes criteria for recycled water projects, recycling requirements, and WDRs. The intent of the Policy is to protect designated beneficial uses and protect water quality while increasing recycled water use, allowing for streamlined permitting for appropriate landscape irrigation projects, and allowing basin-wide management of salts and nutrients. The Recycled Water Policy states that the appropriate way to address salts and nutrients is through development of regional and sub-regional salt and nutrient management plans. This Order requires the USMC to continue to implement the *Final Salt and Nutrient Management Plan Southern MCB Camp Pendleton* (including the Lower Santa Margarita, Las Flores Creek and Las Pulgas Watersheds) and the *2013 San Diego Integrated Regional Water Management Plan for the Mission Basin*.⁴
- E. **Antidegradation Policy.** The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in Section V of this Information Sheet, regulation of the discharges of recycled water from the SRTTP will result in receiving water quality that is consistent with the State and federal antidegradation policies.

III. RATIONALE FOR DISCHARGE SPECIFICATIONS

The Order establishes technology and water quality based discharge specifications, and discharge specifications based on title 22, for the discharge of recycled water from the SRTTP.

- A. **Technology-based Discharge Specifications.** The technology based discharge specifications are for biological oxygen demand, total suspended solids, and pH. These discharge specifications are based on design criteria for removal of these constituents by secondary wastewater treatment technology.
- B. **Water Quality-based Discharge Specifications.** The water quality-based discharge specifications are derived from the basin-specific water quality objectives in Table 2

(from Table 3-3 of the Basin Plan for the Mission HSA 903.11 and Ysidora HA 902.10).

Table 2. Basin-Specific Groundwater Water Quality Objectives

⁴ The Mission Basin is part of the San Luis Rey Hydrologic Unit

HYDRO LOGIC AREA	CONSTITUENT (mg/L or as noted)												
	(Concentrations not to be exceeded more than 10% of the time during any one year period)												
	TDS	Cl	SO ₄	%Na	NO ₂	Fe	Mn	MB AS	B	ODOR	TURB (NTU)	COLOR (UNITS)	F
Mission 903.11	1500	500	500	60	45	0.84	0.15	0.5	0.75	none	5	15 ^d	1.0
Ysidora 902.10	750	300	300	60	45	0.3	0.05	0.5	0.75	none	5	15	1.0

Endnotes for Table 3

mg/L = milligrams per liter, TDS = Total Dissolved Solids, Cl- = Chloride, SO₄ = Sulfate, % Na = Percent Sodium, NO₃ = Nitrate, Fe = Iron, Mn = Manganese, MBAS = Methylene Blue Activated Substances, B = Boron, TURB = Turbidity, NTU = Nephelometric Turbidity Units, F- = Fluoride

- C. **Total Nitrogen Discharge Specification.** This Order raises the annual average total nitrogen effluent discharge specification of 5.0 to 10 mg/L. This effluent discharge specification is raised because a recent Basin Plan amendment raised the groundwater quality objective for nitrate to the drinking water standard of 45 mg/L or 10 mg/L as total nitrogen for all basins in the Region except the Warner Basin.

Special Provision VI.I requires the Discharger to cease operation of the Ysidora Flats injection field (Figure A-3) if groundwater quality in upgradient compliance wells exceed the specified limits. Special Provision VI.I is needed to ensure the injection wells in the Ysidora Flats are providing the function of the seawater intrusion barrier without causing migration of the recycled water upgradient towards the Chappo Subbasin potable well field. Nitrogen was selected because an indicator parameter as the concentration of nitrogen in the groundwater in the Lower Ysidora Subbasin has been historically below the previous 5 mg/L discharge specification. N-Nitrosodimethylamine (NDMA) was also selected as an indicator parameter as this chemical compound can be present as a wastewater disinfection by-product.

- D. **Sodium Hazard Discharge Specification.** The Water Quality Control Plan for the San Diego Basin (Basin Plan) establishes a groundwater quality objective for percent sodium that protects agricultural supply beneficial uses from the potential hazard due to sodium in irrigation waters. The Basin Plan sets water quality objectives and this Order establishes a sodium hazard discharge specification because excess concentrations of sodium in irrigation water reduce soil permeability to water and air. The percent sodium objective is expressed as the ratio of sodium to the sum of sodium, calcium, magnesium, and potassium (expressed in milliequivalents per liter).

Since the installation of an advanced water treatment plant (AWT), recycled water produced at the SRTTP have periodically exceeded the percent sodium discharge specification of 60 percent established in Order R9-2009-0021. The AWT uses reverse osmosis (RO) to reduce the total dissolved solids (TDS) in the potable supply at MCBCP. The RO treatment process disproportionately removes larger cations, such as calcium and magnesium, which results in an increase in the

percentage of sodium cations in the treated water. Thus the RO process increases the percent sodium value even though total mass of sodium may be reduced. This Order retains the discharge specification for sodium hazard set at the percent sodium water quality objective of 60 percent. However, the Basin Plan provides an alternative to the percent sodium water quality objective to determine the potential sodium hazard of irrigation water. The alternative objective determines the sodium hazard using a methodology that evaluates the adjusted sodium adsorption ratio (SAR) and the electrical conductivity of the water. The water quality objective is met if the adjusted SAR and electrical conductivity values indicate that the “degree or restriction on use” of the water is within or below the “slight to moderate” range in Table 3-1 of the Basin Plan.

This Order includes the adjusted SAR alternative to assess the sodium hazard if the percent sodium is above the 60 percent discharge specification. In that situation the Discharger may demonstrate that the recycled water’s sodium hazard is within or below the slight to moderate range for the “degree of restriction or use” determined by an evaluation of the adjusted SAR and the electrical conductivity of the recycled water.

- E. **Title 22 Specifications.** This Order contains discharge specifications for chlorine residual, turbidity, chlorine contact time, and total coliform bacteria. Title 22 specifications are included in this Order because the USMC currently provides recycled water from the SRTTP to four recycled water use areas. These specifications are based upon concentration limits found in title 22, and upon recommendations from the DDW for the protection of human health at use sites. Recycled water from the SRTTP discharged to reuse sites must meet the definition of “disinfected tertiary recycled water” in title 22, section 60301.230; and “filtered wastewater” in title 22, section 60301.320 incorporated by reference, including future changes to the incorporated provisions as the changes take effect.

V. COMPLIANCE WITH THE ANTIDegradATION POLICY

State Water Board Resolution No. 68-16, the *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (the Antidegradation Policy) requires that disposal of waste into the waters of the State be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the State. The quality of some waters is higher than established by adopted policies and that higher quality water must be maintained to the maximum extent possible consistent with the Antidegradation Policy.

The Antidegradation Policy requires the following:

- Higher quality water will be maintained until it has been demonstrated to the State that any change will be consistent with the maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of the water, and will not result in water quality less than that prescribed in the Basin Plan.

- Any activity that produces waste or may produce waste or increased volume or concentration of waste, and discharges to existing high quality waters will be required to meet waste discharge requirements that will result in the best practicable treatment or control the discharge necessary to assure pollution or nuisance will not occur, and the highest water quality consistent with the maximum benefit of the people of the State will be maintained.
- A. **Maximum Benefit to the People of the State.** In a semi-arid climate, such as that of the San Diego Region, the maximum benefit to the people of the State can only be achieved by ensuring long and short-term protection of economic opportunities, human health, and environmental protection. In order to do that, water uses must be better matched to water quality, and use of local supplies must be encouraged to the extent possible, including reusing treated wastewater that would otherwise flow to the ocean or other salt sinks without supporting beneficial uses during transmission.⁵ The use of recycled water in place of both raw and potable water supplies for the non-potable uses allowed under this Order improves water supply availability and helps to ensure that higher quality water will continue to be available for human uses and for in stream uses for fish and wildlife. The discharge to create a seawater intrusion barrier near Ysidora Flats will reduce the volume disposed to the ocean and contribute to groundwater quality improvements in the Ysidora Basin as well.
- B. **Present and Anticipated Uses of Water and Water Quality Prescribed in the Basin Plan.** Constituents associated with recycled water that have the potential to degrade groundwater quality include Total Dissolved Solids (TDS or salts), nutrients, pathogens (represented by coliform bacteria), and disinfection by-products (DBPs). The use of recycled water permitted under the Order will not unreasonably affect present and anticipated beneficial uses or result in water quality that is less than that prescribed in the Basin Plan because of the following characteristics and requirements associated with each of the recycled water constituents of concern.
1. **Nitrogen.** This Order raises the total nitrogen discharge specification to be consistent with the recently relaxed groundwater quality objective for nitrate in the subbasin.⁶ Allowing some degradation of water quality with respect to nitrogen is reasonable because it makes recycled water cheaper to produce by relaxing nitrogen treatment requirements, and will not cause groundwater quality to be less than that prescribed in the Basin Plan.

To ensure that groundwater quality in irrigation areas does not exceed the

⁵ The Legislature also expressed its intent that the State undertake all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the State (Water Code section 13512).

⁶ The Basin Plan nitrate (as NO₃) objective of 45 mg/L equates to a nitrate-nitrogen (NO₃-N) concentration of 10 mg/L. Nitrogen content of nitrate is 22.5 percent of the total weight of the molecule. The nitrate-nitrogen equivalent concentration is derived by multiplying the nitrate (as NO₃) objective of 45 mg/L by 0.225.

drinking water standard, this Order requires end users to take into consideration nutrient levels in recycled water and nutrient demand by plants when using recycled water for landscape irrigation. Application of recycled water at agronomic rates considers nutrient and water demand, and minimizes the movement of nutrients below the plant's root zone. When applied to cropped or landscaped land, some of the nitrogen in recycled water will be taken up by the plants, and lost to the atmosphere through volatilization of ammonia or denitrification. The Rules and Regulations for Recycled Water Use (Attachment B) require recycled water supervisors to ensure that recycled water and fertilizer are applied to landscapes at agronomic rates in end use areas, and to avoid overwatering. Furthermore, supervisors are required to receive the training needed to manage fertilizer and recycled water applications to achieve agronomic rates. The Discharger is required to inform the recycled water supervisors of the nitrogen content of the recycled water supplied for irrigation.

These requirements will prevent the use of recycled water from impairing an existing or potential beneficial use of groundwater.

2. **Chloride, Sulfate and Total Dissolved Solids.** Chloride, sulfate, and TDS can be present in recycled water at concentrations that degrade groundwater quality. Groundwater quality in the Mission Basin and Ysidora Basin does not meet the TDS water quality objectives in the Basin Plan. This Order lowers the annual average discharge specifications in Order No. R9-2009-0021 for chloride, sulfate, and for TDS in the Ysidora Basin to concentrations equal to their respective Basin Plan water quality objectives. Order No. R9-2009-0021 established a discharge specification for these constituents above the Basin Plan groundwater quality objective. Finding No. 5 in Order R9-2009-0021 stated, however, that exceedances of water quality objectives would be temporary and localized in anticipation of the AWT becoming operational and lowering TDS and mineral concentrations in treatment plant influent. During the time the AWT was operational average annual effluent concentrations for chloride, sulfate, and TDS were below their respective water quality objectives (Figure 1). With the discharge specifications for these constituents set at their respective water quality objectives in the two basins, water quality may improve in irrigation areas, and in the vicinity of the seawater intrusion barrier.
3. **Pathogens.** Pathogens and other microorganisms may be present in recycled water depending upon the disinfection status of the recycled water. Coliform bacteria are used as a surrogate (indicator) because they are present in untreated wastewater, survive in the environment similar to pathogenic bacteria, and are easy to detect and quantify. Pathogens are generally limited in their environmental mobility when applied to land.

Setbacks from recycled water use areas are required in, title 22, as a means of reducing pathogenic risks by coupling pathogen inactivation rates with groundwater travel time to a well or other potential exposure route (e.g. water

contact activities). In general, a substantial unsaturated zone reduces pathogen survival compared to saturated soil conditions. Fine grained soil particles, like silt or clay, reduce the rate of groundwater transport and therefore are generally less likely to transport pathogens. Setbacks also provide attenuation of other recycled water constituents through physical, chemical, and biological processes. Attachment B of the Order requires the Discharger to include requirements for implementing and maintaining adequate setback distances in the end use areas from drinking water wells. These requirements must be specified in the Discharger's Rules and Regulations for Recycled Water Use. The Order also requires the Discharger to treat recycled water to meet disinfection requirements for tertiary treated recycled water specified in title 22.

4. **Disinfection by-products.** Disinfection by-products (DBPs) consist of organic and inorganic substances may which be present in recycled water. These by-products can be produced by the interaction of chemical disinfectants with naturally occurring substances in the water source. Common DBPs include trihalomethanes, haloacetic acids, bromate, chlorite, and NDMA. DBPs present in recycled water receive additional treatment when applied to land. Biodegradation, adsorption, volatilization, and other attenuative processes that occur naturally in soil will reduce the concentrations and retard migration of DBPs in the subsurface.

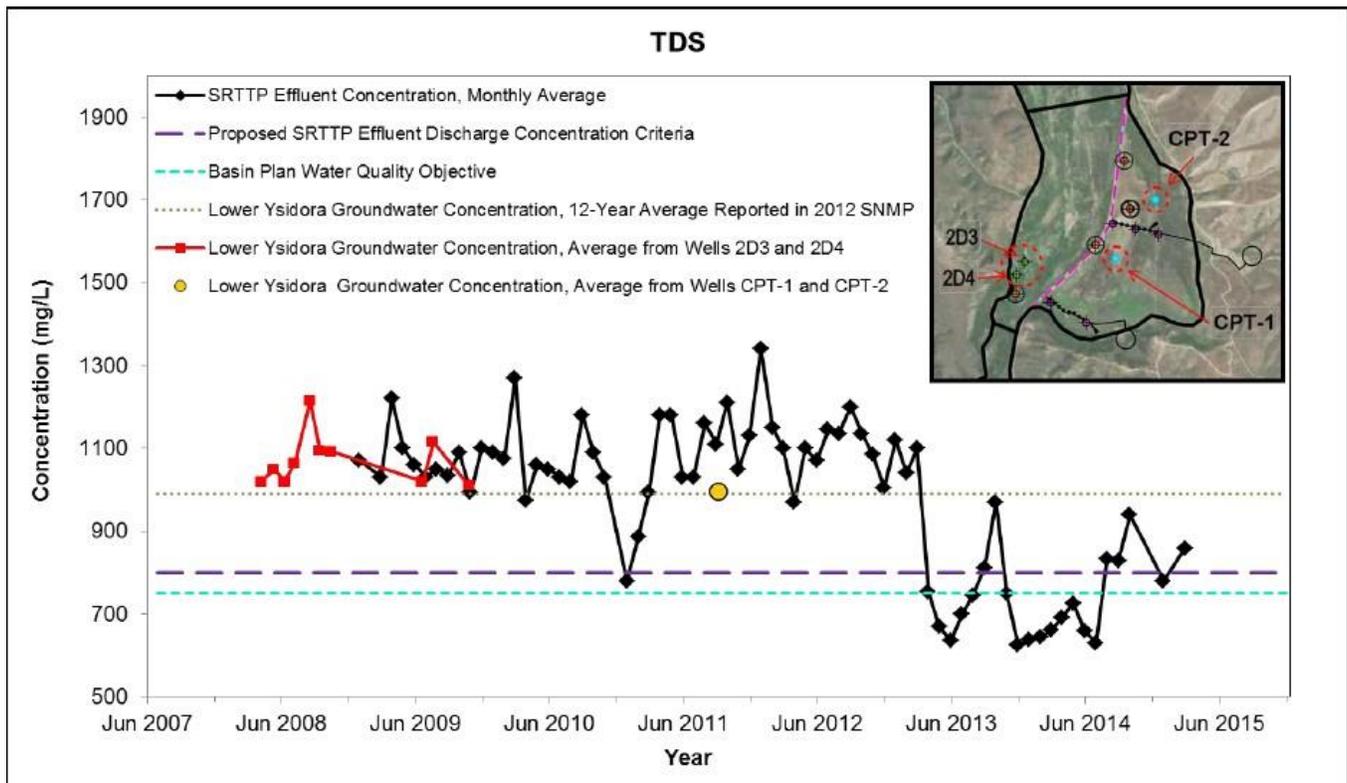
- C. **Ysidora Flats Seawater Intrusion Barrier.** The seawater intrusion barrier injection at the Ysidora Flats area is a salinity management project proposed in the *Salt and Nutrient Management Plan Southern MCB Camp Pendleton (SNMP)* to improve water quality and to protect the base's upgradient water supply wells. The USMC participated as the primary stakeholder in the development of the SNMP dated November 8, 2012. The USMC was the primary stakeholder as the affected groundwater basins are entirely within the jurisdiction of MCBCP.

According to the SNMP, neither the Lower Ysidora nor Upper Ysidora subbasins have assimilative capacity with regard to TDS. A proposed implementation measure in the SNMP is to develop a saltwater intrusion barrier by injecting recycled water into the deep aquifer located in the Lower Ysidora Subbasin. The seawater intrusion barrier is intended to improve salinity in both the Upper Ysidora and Chappo subbasins, by eliminating the introduction of dissolved salts from sea water drawn into those groundwater basins by inland hydraulic gradients created by pumping water supply wells. Improving water quality in the Chappo Subbasin is critical as groundwater from this subbasin is used for municipal and domestic supply on the base.

Figure 1 is a plot of the groundwater monitoring results for TDS concentrations in the Lower Ysidora Subbasin. The figure shows the 750 mg/L groundwater quality objective for the subbasin, the previous TDS discharge specification of 800 mg/L from Order No. R9-2009-0021, and the TDS concentration in effluent. Although data are limited to the years 2008 and 2009, they are consistent with the findings of the

SNMP that TDS concentrations in groundwater are above the water quality objective. Effluent samples reported for the SRTTP between 2012 and 2016 had an average TDS concentration of 875 mg/L. However, the AWT began operations on December 1, 2013 until it ceased operations for maintenance on February 16, 2016. During that time period TDS concentrations in AWT effluent decreased below the water objective for the Ysidora HA. Over time the TDS concentration is expected to decrease in the subbasin, because of the added benefits of preventing seawater intrusion, and the effects of dilution from the lower TDS concentration of the recycled water from the SRTTP.

Figure 1. TDS Evaluation in Lower Ysidora Subbasin



Along with total nitrogen, the MRP (Attachment D) requires NDMA to be monitored in the Lower Ysidora Flats area compliance monitoring wells. The Order requires the Discharger to decrease or cease the discharge, if groundwater quality in samples from monitoring wells located hydrologically upgradient from the Ysidora Flats injection site (Figure A-3) indicate that annual average concentrations of total Nitrogen are above 5 mg/L, or NDMA is above notification levels. The water quality objective for nitrate is 45 mg/L which is equivalent to a concentration of total Nitrogen of 10 mg/L. To ensure that injected recycled water does not migrate vertically into the shallow aquifer in the lower Ysidora Basin, and into the Santa Margarita River, the MRP also requires the Discharger to monitor major ion chemistry of the injected water, groundwater in the deep aquifer, and groundwater in the shallow aquifer. The major ion chemistry of these three different waters are sufficiently different, that if they mix, it will be reflected in changes in major ion chemistry.

- D. **Red Beach Injection Wells.** This Order adds the Red Beach injection wells as a disposal area for effluent from the SRTTP. These wells are located in the San Onofre HA, however, groundwater quality objectives specified in the Basin Plan for the HA are not applicable westward of Interstate 5 due to the influence of the ocean on groundwater quality. The Red Beach injection wells are west of Interstate 5, thus water quality objectives do not apply in this area. The Red Beach injection wells were previously used to dispose of treated wastewater from Sewage Treatment Plant No. 9 under WDRs in Order No. 98-04. Effluent discharged to the Red Beach well field from the SRTTP will be of higher quality than what had been historically discharged from Sewage Treatment Plant No. 9. Therefore, disposal of recycled water from the SRTTP through the Red Beach injection wells will not degrade groundwater quality.

VI. RATIONALE FOR WATER RECYCLING REQUIREMENTS

Water Recycling Requirements are included in this Order pursuant to Water Code section 13523 and based on recommendations from the DDW. In accordance with title 22, the DDW reviews engineering reports for the production, distribution, and use of recycled water. The San Diego Water Board relies on the expertise of the DDW and includes recommendations from DDW in WDRs to ensure recycled water is treated and used in a manner that protects human health. The Discharger must certify that the Facility and other existing purveyance facilities meet DDW's requirements, or must update the title 22 engineering report to comply with DDW's requirements. The Order also requires the Discharger to maintain Rules and Regulations for Recycled Water Use (Attachment B) that comply with DDW's requirements. The Rules and Regulations must include an inspection and cross-connection testing program. The Order also requires the Discharger to update its Rules and Regulations to include requirements to ensure use and transport of recycled water from recycled water fill stations will be protective of public health and the environment if, in the future, the Discharger operates recycled water fill stations.

VII. RATIONAL FOR STANDARD PROVISIONS, SPECIAL PROVISIONS, AND NOTIFICATIONS

- A. **Standard Provisions.** The standard provisions contain language that allows the San Diego Water Board to enforce Order No. R9-2018-0023. Provisions include need for inspection, spill and emergency reporting, records maintenance, and reporting of changes. Standard provisions apply to all WDRs and are consistent with San Diego Water Board findings.
- B. **Special Provisions- Facility Design and Operation Specifications.** The SRTTP was designed and constructed in accordance with a title 22 engineering reports reviewed by the DDW. The Design and Operation Specifications in the Order require that the plant be operated by appropriately certified wastewater operators, require application of recycled water and fertilizer in end use sites at agronomic rates, require maintenance of a facility operation manual and appropriate references, and require implementation of best management practices for protection of human health. With respect to the seawater intrusion injection barrier in the Ysidora Flats area, the project described in the ROWD must comply with

applicable requirements and conditions specified by the DDW. During development of this Order the DDW reviewed the ROWD and provided guidance for requirements in this Order for the project. The Order incorporates the applicable requirements and conditions for siting additional base water supply wells with respect to injection wells and recycled water use areas, installation and monitoring of recycled water injection wells, monitoring of water quality associated with the creation of the seawater intrusion barrier, and monitoring criteria for determining if the operation of the seawater intrusion barrier system must be terminated to ensure protection of water quality.

- C. **Notifications.** Notifications are included in the Order to inform the Discharger of administrative issues regarding this Order.

VIII. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

The purpose of Monitoring and Reporting Program (MRP) No. R9-2018-0023 (the MRP) is to determine and ensure compliance with discharge specifications and other requirements established in this Order, assess treatment efficiency, characterize effluents, and characterize the receiving water and the effects of the discharge on the receiving water. The MRP also specifies requirements concerning the proper use, maintenance, and installation of monitoring equipment and methods, and the monitoring type intervals and frequency necessary to yield data that are representative of the activities and discharges regulated under this Order.

The MRP is issued pursuant to Water Code section 13267, which authorizes the San Diego Water Board to require technical and monitoring program reports. The use of laboratories certified for federally standardized test methods, and quality assurance and control procedures ensures the reliability and validity of the data as well as consistency and comparability with regulations.

Consistent with the *Framework for Monitoring and Assessment in the San Diego Region*,⁷ the monitoring required by the Order answers the three specific monitoring questions below.

- Will the production, conveyance, and end use of recycled water regulated by this Order be done in a manner that protects public health and the environment?
- Is groundwater designated for municipal and domestic use safe to drink in irrigation end use areas regulated by this Order?
- Is the recycled water that is injected to the Ysidora Flats seawater intrusion barrier migrating vertically into the shallow aquifer or upgradient to the potable well field?

⁷ California Regional Water Quality Control Board, San Diego Region, Staff Report, November 2012.

This monitoring program has basic three components; effluent quality monitoring, recycled water production/distribution monitoring, and groundwater monitoring. Specific monitoring questions related to the questions above for each component are provided below.

1. Effluent monitoring consists of the basic site-specific monitoring necessary to measure compliance with individual effluent discharge specifications and/or assess potential impacts to groundwater water quality. Core monitoring is typically conducted at the end of the treatment process and prior to distribution of recycled water to use sites. Effluent monitoring will answer the following questions.
 - a. Does the effluent comply with permit discharge specifications and other requirements of this Order, thereby ensuring that water quality objectives are achieved in the groundwater?
 - b. Does the effluent comply with the statewide treatment standards for recycled water, as required by title 22?
 - c. Is the Facility being properly operated and maintained to ensure compliance with the conditions of the Order?
2. Recycled water distribution monitoring provides information necessary to track the distribution of recycled water in the San Diego Region. This information provides an essential part of a cumulative picture of the distribution and use of recycled water within the San Diego Region.

Collection and analysis of recycled water production and use site data will help answer the following questions.

- a. What is the total volume of recycled water produced from the SRTTP?
 - b. Where are the recycled water use sites located?
 - c. What is the volume of recycled water delivered to each use site?
 - d. What is the level of compliance with Rules and Regulations at recycled water reuse sites?
3. Groundwater monitoring provides information necessary to ensure that the injection of recycled water for the creation of a seawater intrusion barrier in the Lower Ysidora Subbasin does not have an adverse impact on groundwater quality.
 - a. Are TDS concentrations in receiving groundwater quality decreasing?
 - b. Are impacts from the discharge of effluent in the seawater intrusion barrier evident in concentrations of constituents in the groundwater?

- c. Is groundwater quality upgradient of the seawater intrusion barrier adversely affected by the discharge?

IX. PUBLIC PARTICIPATION

Two of the four values of the San Diego Water Board espoused in its Practical Vision are communication and transparency. Participation of the public in the decision making process of the Board is a hallmark of the board governmental structure in California and essential to this Board's success. The San Diego Water Board has taken the following steps to encourage public participation in the Master Recycling Permit adoption process.

A. Notification of Interested Parties

Consistent with Water Code section 13167.5, the San Diego Water Board has notified the Discharger and interested agencies and persons of its intent to adopt a Master Recycling Permit for the discharge and made Tentative Order No. R9-2018-0023 available on its website. The San Diego Water Board provided the Discharger, interested agencies and the public with an opportunity to submit their written comments and recommendations on the Tentative Order. Notification was provided through the San Diego Water Board website and board meeting agenda publication.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning Tentative Order No. R9-2018-0023. Comments must be submitted either in person, in writing, or by email including a signed cover letter sent via email to sandiego@waterboards.ca.gov in text searchable Portable Document Format (PDF) or Microsoft Word format by 5:00 p.m. on April 23, 2018. Comments should be addressed to the attention of Mr. Alex Cali.

To be fully responded to by staff and considered by the San Diego Water Board, written comments must be received at the San Diego Water Board offices by 5:00 p.m. on April 23, 2018.

C. Public Hearing

The San Diego Water Board will hold a public hearing on Tentative Order No. R9-2018- 0023 during its regular Board Meeting on the following date and time and at the following location:

Date: May 9, 2018
Time: 9:00 am
Location: 200 Civic Center
Mission Viejo, CA 92691

Interested persons are invited to attend. At the public hearing, the San Diego Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is http://www.waterboards.ca.gov/sandiego/board_info/agendas/ where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirement Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the San Diego Water Board regarding the final WDRs. The petition must be submitted within 30 days of the San Diego Water Board's action to the following address:

State Water Resources Control Board Office of Chief Counsel
P.O. Box 100, 1001 I Street Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge, related documents, tentative discharge specifications and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the San Diego Water Board by calling (619) 516-1990.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the Order should contact Mr. Alex Cali at (619) 521-3355 or at Alex.Cali@waterboards.ca.gov reference this facility, and provide a name, address, phone number, and email address.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Mr. Alex Cali at (619) 521-3355 or at Alex.Cali@waterboards.ca.gov.

ATTACHMENT D: MONITORING AND REPORTING PROGRAM NO. R9-2018-0023
FOR THE UNITED STATES MARINE CORPS BASE CAMP PENDLETON, SOUTHERN
REGIONAL TERTIARY TREATMENT PLANT, SAN DIEGO COUNTY

This Monitoring and Reporting Program (MRP) is issued to the United States Marine Corps (USMC) pursuant to Water Code section 13267, which authorizes the California Regional Water Quality Control Board, San Diego Region (San Diego Water Board) to require technical and monitoring reports. The San Diego Water Board Executive Officer has the authority to modify this MRP as appropriate.

I. GENERAL MONITORING PROVISIONS

- A. Samples and measurements collected as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be collected at the monitoring points specified in this MRP and, unless otherwise specified, before the effluent joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notifying, and receiving approval from the San Diego Water Board for the proposed monitoring location change.
- B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated, and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than 10 percent from true discharge rates throughout the range of expected discharge volumes.
- C. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under 40, Code of Federal Regulations, part 136, *Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act* (USEPA Guidelines) as amended, unless other test procedures have been specified in this MRP.
- D. Unless otherwise permitted by the San Diego Water Board, all analyses shall be conducted at a laboratory certified to perform such analyses by the State Water Resources Control Board Division of Drinking Water (DDW). The Discharger must use a laboratory capable of producing and providing quality assurance/quality control (QA/QC) records for San Diego Water Board review. The director of the laboratory whose name appears on the certification must supervise all analytical work in his/her laboratory and must sign all reports submitted to the San Diego Water Board.

- E. Any report presenting analytical data is required to include the complete laboratory and analytical report(s). The laboratory analytical report must be signed by the laboratory director and contain:
 - 1. A complete sample analytical report.
 - 2. A complete laboratory quality assurance/quality control (QA/QC) report.
 - 3. A discussion of the QA/QC data.
 - 4. A transmittal letter confirming that all the analytical work was supervised by the director of the laboratory. The transmittal laboratory must contain the following statement, "All analyses were conducted at a laboratory certified for such analyses by the DDW in accordance with current USEPA procedures."
- F. Specific methods of analysis must be identified in the Discharger's monitoring reports. If the Discharger proposes to use methods or test procedures other than those included in the most current version of the USEPA Guidelines, the exact methodology must be submitted for review and must be approved by the San Diego Water Board prior to use.
- G. If the Discharger monitors any parameters more frequently than required by this MRP, using test procedures approved under the USEPA Guidelines or as specified in this MRP, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharger's monitoring report. The increased frequency of monitoring shall also be reported.
- H. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation and copies of all reports required by this MRP, and records of all data used to complete the application for this MRP. Records shall be maintained for a minimum of five years from the date of the sample, measurement, report or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when required by the San Diego Water Board. Records of monitoring information shall include the following:
 - 1. The date, exact place, and time of sampling or measurements.
 - 2. The individual(s) who performed the sampling or measurements.
 - 3. The date(s) analyses were performed.
 - 4. The individual(s) who performed the analyses.
 - 5. The analytical techniques or methods used.
 - 6. The results of such analyses.

- I. All monitoring instruments and devices that are used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.
- J. All applications, reports, or information submitted to the San Diego Water Board shall be signed and certified as follows:
 1. By the Commanding Officer for Marine Corps Base Camp Pendleton
 2. By direction of the person designated by the Commanding Officer if:
 - a. The authorization is made in writing by Commanding Officer;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - c. The written authorization is submitted to the San Diego Water Board
 3. All other reports required by this Order and other information required by the San Diego Water Board shall be signed by a person designated in Section J.2 or a duly authorized representative of that person. An individual is duly authorized representative only if the following are true:
 - a. The authorization is made in writing by a person described in Section J.2;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - c. The written authorization is submitted to the San Diego Water Board.
 4. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."
- K. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants, aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the

total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

- L. A grab sample is an individual sample of at least 100 milliliters collected at a randomly selected time over a period not exceeding 15 minutes.
- M. The Discharger shall identify all missing or non-valid monitoring or sampling results in monitoring reports submitted. All instances of missing or non-valid results must be accompanied by an explanation of their root cause and the steps the Discharger has or will take to prevent future instances. Missing or non-valid results may be considered violations of MRP No. R9-2018-0023 that could result in enforcement action depending on the frequency of such instances and efforts by the Discharger to prevent such failures.

II. EFFLUENT MONITORING REQUIREMENTS

Effluent that will be discharged to landscape irrigation sites or reuse sites subject to Water Recycling Criteria specified in title 22, California Code of Regulations shall be monitored downstream from the chlorine contact basin. Required effluent monitoring is shown in Table 1.

Table 1. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}	Reporting Frequency
Flow Rate	mgd	Continuous	Continuous	Monthly
Chlorine Residual ^c	mg/L	Continuous	Continuous	Monthly
Chlorine-Contact Time (CT) ^c	mg-min/L	Calculated	Continuous	Monthly
Total Coliform Bacteria ^d	MPN/100 mL	Grab	Daily	Monthly
Turbidity ^e	NTU	Continuous	Continuous	Monthly
Biological Oxygen Demand (BOD ₅ @ 20°C)	mg/L	Composite	Weekly	Monthly
Total Suspended Solids	mg/L	Composite	Weekly	Monthly
pH	pH units	Grab	Weekly	Monthly
Chloride (Cl)	mg/L	Composite	Quarterly	Quarterly
Sulfate (SO ₄)	mg/L	Composite	Quarterly	Quarterly
Percent Sodium (%Na)	%	Composite	Quarterly	Quarterly
Electrical Conductivity	mmho/cm or dS/m	Grab	Quarterly	Quarterly
Adjusted SAR ^f	-	Calculated	Quarterly	Quarterly
Nitrate (NO ₃)	mg/L	Composite	Quarterly	Quarterly
Total Nitrogen	mg/L	Composite	Quarterly	Quarterly
Iron (Fe)	mg/L	Composite	Quarterly	Quarterly
Manganese (Mn)	mg/L	Composite	Quarterly	Quarterly
Methylene Blue-Activated Substances (MBAS)	mg/L	Composite	Quarterly	Quarterly
Boron (B)	mg/L	Composite	Quarterly	Quarterly
Fluoride (F)	mg/L	Composite	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Composite	Quarterly	Quarterly

Parameter	Units	Sample Type	Minimum Sampling Frequency ^{a,b}	Reporting Frequency
(TDS)				
Total Organic Carbon (TOC)	mg/L	Composite	Quarterly	Quarterly
Aluminum	mg/L	Composite	Annually	Annually
Arsenic	mg/L	Composite	Annually	Annually
Antimony	mg/L	Composite	Annually	Annually
Barium	mg/L	Composite	Annually	Annually
Beryllium	mg/L	Composite	Annually	Annually
Cadmium	mg/L	Composite	Annually	Annually
Cyanide	mg/L	Composite	Annually	Annually
Mercury	mg/L	Composite	Annually	Annually
Nickel	mg/L	Composite	Annually	Annually
Perchlorate	mg/L	Composite	Annually	Annually
Selenium	mg/L	Composite	Annually	Annually
Thallium	mg/L	Composite	Annually	Annually
N-Nitrosodimethylamine (NDMA)	mg/L	Composite	Annually	Annually
Total Phosphorous	mg/L	Composite	Annually	Annually
Priority Pollutants ^g	mg/L	Composite	Annually	Annually

- a. The Discharger shall increase the sampling frequency from weekly to daily, from quarterly to monthly, and from once every 5 years to annually for any constituent that exceeds the discharge specifications of this Order. The increased frequency of monitoring shall continue until the Discharger achieves compliance with the specification for three consecutive periods, at which point the Recycled Water Agency shall resume sampling at the specified frequency.
- b. Weekly is defined as a calendar week (Sunday through Saturday). Monthly is defined as a calendar month. Quarterly is defined as a period of three consecutive calendar months beginning on January 1, April 1, July 1, or October 1. Annually is defined as a period of 12 consecutive calendar months beginning on January 1.
- c. Calculated CT (chlorine concentration multiplied by modal contact time) values shall be determined and recorded continuously. The daily minimum CT value shall be reported monthly. The Discharger shall report monthly the date(s), value(s), time and duration when the CT value falls below 450 mg-min/L, and/or the modal contact time falls below 90 minutes.
- d. Samples for total coliform bacteria shall be collected at least daily and at a time when wastewater characteristics are most demanding on the treatment facilities and disinfection procedures. Results of daily coliform bacteria monitoring, running 7-day median determination shall be reported monthly.
- e. Effluent samples collected to determine turbidity (when required) shall be collected after the media filters. Effluent tertiary turbidity analyses shall be conducted continuously using a continuous monitoring and recording turbidity meter. Compliance with the daily average operating filter effluent turbidity limit of 2 NTU shall be determined using levels of recorded turbidity levels at a minimum of four-hour intervals over a 24-hour period. Compliance with the turbidity standard no exceeding 5 NTU more than 5 percent of the time over a 24-hour period shall be determined using the levels of recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. Should the continuous turbidity meter and/or recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. The Discharger shall report quarterly results of four-hour turbidity readings, average effluent turbidity (24-hours), 94 percentile effluent turbidity (24-hours), and daily maximum turbidity readings.
- f. Bicarbonate must be analyzed along with the other reported constituents to be able to calculate the adjusted SAR.
- g. Priority pollutant monitoring is required by the State Water Board *Recycled Water Policy*, section 7.b.4. Priority pollutants are constituents listed in Appendix A of 40 Code of Federal Regulations part 423.

III. GROUNDWATER MONITORING REQUIREMENTS

The groundwater monitoring program shall include the following at a minimum:

- A. A sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples to detect migration of injected recycled water to the Santa Margarita River or upgradient approaching the potable well field in the Chappo Subbasin.
- B. For each of the wells identified within the Sampling and Analysis Plan submitted pursuant to Section III.A of this MRP, the Discharger shall conduct groundwater monitoring in accordance with the program outlined in Table 2.

Table 2. Groundwater Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency^a
pH	pH Units	Grab	Quarterly/Semi-Annually
Total Dissolved Solids (TDS)	mg/L	Grab	Quarterly/Semi-Annually
Chloride (Cl)	mg/L	Grab	Quarterly/Semi-Annually
Sulfate (SO ₄)	mg/L	Grab	Quarterly/Semi-Annually
Percent Sodium (%Na)	%	Grab	Quarterly/Semi-Annually
Total Nitrogen (as N)	mg/L	Grab	Quarterly/Semi-Annually
Nitrate (as N)	mg/L	Grab	Quarterly/Semi-Annually
Iron (Fe)	mg/L	Grab	Quarterly/Semi-Annually
Manganese	mg/L	Grab	Quarterly/Semi-Annually
Methylene Blue Active Substances (MBAS)	mg/L	Grab	Quarterly/Semi-Annually
Boron	mg/L	Grab	Quarterly/Semi-Annually
Fluoride	mg/L	Grab	Quarterly/Semi-Annually
Color	mg/L	Grab	Quarterly/Semi-Annually
Total Phosphorous	mg/L	Grab	Quarterly/Semi-Annually
N-Nitrosodimethylamine (NDMA)	mg/L	Grab	Quarterly/Semi-Annually
Bicarbonate ^b	mg/L	Grab	Annual

- a. The buffer zone compliance monitoring wells will be sampled quarterly, and the seawater barrier, injection, and potable zones will be sampled semi-annually (Figure A-3).
- b. Bicarbonate must be analyzed annually to be able to conduct an annual comparison of water quality in the deep aquifer and the shallow aquifer.

- C. The Discharger shall sample compliance monitoring wells in the buffer zone quarterly. Compliance monitoring wells in the seawater barrier zone, injection zone, and the potable zone will be sampled semi-annually. The zones are delineated in Figure A-3 (Attachment A).

- D. The Discharger shall provide documentation that plans and reports required under this MRP are prepared by or under the direction of, appropriately qualified professionals. The California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. A statement of qualifications and license numbers of the responsible lead professionals shall be included in all plans and reports submitted by the Dischargers. The lead professional shall sign and affix their license stamp to the report, plan, or document.

IV. SEAWATER INTRUSION BARRIER MONITORING

- A. Upon initiation of the seawater intrusion barrier in the Lower Ysidora Basin, the Discharger shall conduct an annual comparison of water quality in the deep aquifer, shallow aquifer, and effluent from the SRTTP to determine if effluent injected into the deep aquifer is migrating into the shallow aquifer. After five years, the evaluation frequency may be reduced with the approval of the San Diego Water Board Executive Officer, if groundwater quality in the shallow aquifer has not been impacted by the injected effluent.
- B. The Discharger shall submit a workplan that describes how it plans to fulfill the water quality comparison described in section IV.A of this MRP. The workplan shall be submitted to the San Diego Water Board **180 days** after adoption of Order No. R9- 2018-0023.
- C. The minimum water quality parameters to be included in the water quality comparison are listed in Table 3 below:

Table 3. Seawater Intrusion Barrier Monitoring

Parameter	Units	Sample Type	Minimum Frequency
Total Dissolved Solids (TDS)	mg/L	Grab	Annual
Bicarbonate	mg/L	Grab	Annual
Calcium	mg/L	Grab	Annual
Chloride	mg/L	Grab	Annual
Magnesium	mg/L	Grab	Annual
Potassium	mg/L	Grab	Annual
Sulfate (SO ₄)	mg/L	Grab	Annual
Total Nitrogen (as N)	mg/L	Grab	Annual

V. SAMPLING AND ANALYSIS PLAN

- A. The Discharger shall submit a Sampling and Analysis Plan that incorporates the standard monitoring provisions and describes the sampling and analysis protocols for groundwater and effluent monitoring. The Sampling and Analysis Plan must be received by the San Diego Water Board within 90 days of the adoption of this Order.

1. **Methods of Analysis.** Specific methods of analysis shall be identified in the Sampling and Analysis Plan. If the Discharger proposes to use methods or test procedures other than those included in the most current version of the U.S. Environmental Protection Agency's (USEPA) SW-846 or title 40 of the Code of Federal Regulations (CFR), part 136, the Sampling and Analysis Plan must explain the rationale for the change. The change must be approved by the San Diego Water Board prior to implementation.
2. **Sampling Frequency.** If the Discharger monitors any sampling point or constituent of concern more frequently than required by this MRP, the results shall be included in the monitoring reports. The Discharger shall also report the increased frequency of monitoring and specific monitoring locations to the San Diego Water Board.
3. **Protocols.** Sample collection, storage, and analysis shall be performed in accordance with protocols included in the USEPA's "Test Methods for Evaluations of Solid Waste, Physical/Chemical Methods, SW-846" and in accordance with a written Sampling and Analysis Plan, approved by the San Diego Water Board.
4. **Calibration.** All monitoring instruments and equipment shall be properly calibrated and maintained as necessary to ensure accuracy of measurements.
5. **Record Retention.** The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, and copies of all reports required by this MRP. Records shall be maintained for a minimum of five years from the date of sample or measurements. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the San Diego Water Board.
6. **Sample Records.** Records of monitoring information shall include:
 - a. The date, identity of sample, monitoring point from which the sample was collected, and time of sampling or measurement.
 - b. The name of the individual(s) who performed the sampling or measurements.
 - c. The date and time that analyses were started and completed.
 - d. The analytical techniques or method used, including method of preserving the sample and any other details requested by the San Diego Water Board, such as the identity and volumes of reagents used.
 - e. The calculation of results.
 - f. The results of analyses and the method detection limit (MDL) for each parameter.

- g. The laboratory quality assurance results (e.g. percent recovery, response factor, etc.)
 - h. Chain of custody forms.
- 7. **Standard Reporting Provisions.** The Sampling and Analysis Plan shall incorporate the following:
 - a. The methods of analysis shall be appropriate for the expected concentrations.
 - b. Analytical results falling between the MDL and the practical quantitative limit (PQL) shall be reported as “trace” and shall be accompanied by documents reporting both the MDL and PQL values for that analytical run.
 - c. MDLs and PQLs shall be derived by the laboratory for each analytical procedure, according to the State of California laboratory accreditation procedures. In a relatively interference-free laboratory, derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs.
 - d. If the laboratory suspects that, due to a change in matrix or other effects, the MDL or PQL for a particular analytical run differs significantly from historic MDL or PQL values, the results shall be flagged and reported in the QA/QC report.
 - e. The MDL shall always be calculated such that it represents a concentration with a 99 percent reliability of non-zero results.
 - f. The PQL shall represent the lowest concentration at which a numerical value can be assigned with reasonable certainty.
 - g. All QA/QC data shall be reported, along with the sample results to which they apply. The QA/QC information shall include the method, equipment, and analytical detection and quantitation limits, the recovery rates, an explanation for any recovery rate that is less than 80 percent, the results of equipment and method blanks, the results of spiked and surrogate samples, and the frequency of quality control analysis. Sample results shall be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in field, trip, or laboratory blank samples, the accompanying sample results shall be appropriately flagged in the tabulated data.
 - h. Upon receiving written approval from the San Diego Water Board, a proposed alternative statistical or non-statistical procedure may be used for determining the significance of analytical results for a constituent that is a common laboratory contaminant (e.g. methylene chloride, acetone, diethylhexyl phthalate, and di-n-octyl phthalate) during any given

Reporting Period in which QA/QC samples show evidence of laboratory contamination for that constituent. Nevertheless, analytical results involving detection of these analytes in any background or downgradient sample shall be reported and flagged for easy reference by the San Diego Water Board.

VI. SELF-MONITORING REPORTS

- A. The Discharger shall submit the results of the effluent monitoring required in Section II and the groundwater monitoring required in Section III of this MRP in Self-Monitoring Reports (SMRs). SMRs must be received by the San Diego Water Board by 5:00 p.m. on the first day of each month. If the first day of the month falls on a Saturday, Sunday, State or federal holiday, submit the SMR by 5:00 p.m. on the next regular business day.
- B. Any SMR that contains groundwater monitoring results shall include a location map with the location and depths of both monitoring and injection wells.
- C. The monitoring results to be reported in each SMR shall be based on the sampling frequency, monitoring period, and due dates specified in Table 3:

Table 4. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period	SMR Due Date
Continuous	Continuous	By the first day of the second month following sampling (i.e. March 1 for January samples)
Daily	Daily	
Monthly	January, February, March, April, May, June, July, August, September, October, November, December	
Quarterly	January 1 through March 30	May 1
	April 1 through June 30	August 1
	July 1 through September 30	November 1
	October 1 through December 31	February 1
Semiannually	January 1 through June 30	August 1
	July 1 through December 31	February 1
Annually	January 1 through December 31	February 1

Laboratory reporting limits shall be lower than or equal to the discharge specifications and notification limits. Constituents not detected below the method detection limit shall be reported as non-detect with the applicable value (e.g. ND<0.05 mg/L). Constituents detected between the laboratory reporting limit and method detection limit shall be reported as “estimated concentrations” or noted with appropriate laboratory flags.

- D. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final discharge specifications.

- E. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. For identified violations, the letter must include a description of the requirement that was violated and a description of the violation.
- F. SMRs must be submitted in text searchable PDF format to the San Diego Water Board via email. The email submittals must include a signed cover/transmittal letter (with the facility name, facility contact information, and reference code), and, unless directed otherwise by the Executive Officer, be sent via email to sandiego@waterboards.ca.gov.

VII. RECYCLED WATER REPORTS

- A. The Discharger shall submit quarterly recycled water users' summary reports containing the following information.
 - 1. Total volume of recycled water supplied to all recycled water users for each month of the reporting period.
 - 2. Total number of recycled water use sites receiving recycled water.
 - 3. Address of the recycled water use site.
 - 4. Basin Plan name and number of hydrologic subarea underlying the recycled water use sites.
- B. The Discharger shall submit annual recycled water users' compliance reports containing the following information:
 - 1. Recycled water use site summary report.
 - a. Name of each recycled water reuse site.
 - b. Owner of each recycled water use facility.
 - c. Address of each reuse site.
 - d. Name of the recycled water on-site user supervisor.
 - e. Phone number of the on-site user supervisor.
 - f. Mailing address of the recycled water on-site use supervisor, if different from site address.
 - g. Volume of reclaimed water delivered to each reuse site for each of the 12 months in a calendar year.
 - h. Total area (in acres) of each landscape irrigation site.

- i. The amount of nitrogen¹ (in pounds per acre per year) applied in recycled water on each landscape irrigation site.
2. Recycled water user site inspections.

The Discharger shall report the number of recycled water reuse site inspections conducted by its staff and identify the sites inspected for the reporting period.

3. Recycled water user violations of the Discharger's Rules and Regulations.

The Discharger shall identify all recycled water users known to be in violation of its rules and regulations for recycled water users. The report shall include a description of the noncompliance and its cause, including the period of noncompliance, and if the noncompliance has not been corrected; the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

- C. If the Discharger establishes recycled water fill stations, then the following information shall also be included in the annual recycled water users' compliance report.
 1. A list of all approved residential and commercial recycled water haulers. The District's annual list must indicate any new recycled water haulers that were approved during the calendar year.
 2. A list of users receiving or proposing to receive recycled water from the fill stations (including a list of uses of recycled water for each user).
 3. A list of recycled water end use sites outside the District's recycled water service area.
 4. A summary of the volume of recycled water used (in acre fee) from the fill stations each quarter during the calendar year.
 5. A summary table of all inspections conducted of recycled water use sites which received water from the fill stations during the calendar year and enforcement/ corrective actions initiated by the Discharger during the calendar year. Include a discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into compliance with the Order. Copies of any enforcement actions taken by the Discharger shall be provided to DDW, the San Diego Water Board, and County DEH.
 6. An evaluation of the performance of the recycled water treatment facility, including discussion of capacity issues, system problems, and a forecast of the flows anticipated in the next year.

¹ Concentration of nitrogen in recycled water can be obtained from the recycled water producer.

7. The name and contact information for the recycled water operator/staff responsible for overseeing operation, maintenance, and system monitoring of the fill stations.
- D. The Recycled Water Summary Reports shall be submitted as an attachment to the quarterly SMRs.

Ordered by:

David W. Gibson
Executive Officer
May 9, 2018

ATTACHMENT E – CALCULATION OF ADJUSTED SODIUM ADSORPTION RATIO

Table 3-2 Calculation of adjusted R_{Na} ^{a,b,c}

The adjusted sodium adsorption ratio (adj R_{Na}) for the soil surface is calculated from the following equation:

$$SAR = \frac{Na}{\sqrt{\frac{(Ca_x + Mg)}{2}}}$$

Where Na , Ca , and Mg are in milliequivalents per liter.

Where Na and Mg milliequivalents per liter (meq/L) are taken from the water analysis and Ca_x is obtained from the table below. To use the table, the applied water salinity (EC_w) in mmho/cm or in dS/m and the bicarbonate to calcium ratio (HCO_3/Ca) using milliequivalents per liter must be known from the water analysis.

Ca_x values for near surface soil-water at various applied water salinities and HCO_3/Ca ratios assuming equilibrium conditions for soil-water, no precipitation of magnesium and a partial pressure of CO_2 (PCO_2) of 0.0007 atmospheres.

		Salinity of applied water (EC_w) (mmho/cm or dS/m)											
		0.1	0.2	0.3	0.5	0.7	1.0	1.5	2.0	3.0	4.0	6.0	8.0
Ratio of HC O3 /Ca	0.05	13.20	13.61	13.92	14.40	14.79	15.26	15.91	16.43	17.28	17.97	19.07	19.94
	0.10	8.31	8.57	8.77	9.07	9.31	9.62	10.02	10.35	10.89	11.32	12.01	12.56
	0.15	6.34	6.54	6.69	6.92	7.11	7.34	7.65	7.90	8.31	8.64	9.17	9.58
	0.20	5.24	5.40	5.52	5.71	5.87	6.06	6.31	6.52	6.86	7.13	7.57	7.91
	0.25	4.51	4.65	4.76	4.92	5.06	5.22	5.44	5.62	5.91	6.15	6.52	6.82
	0.30	4.00	4.12	4.21	4.36	4.48	4.62	4.82	4.98	5.24	5.44	5.77	6.04
	0.35	3.61	3.72	3.80	3.94	4.04	4.17	4.35	4.49	4.72	4.91	5.21	5.45
	0.40	3.30	3.40	3.48	3.60	3.70	3.82	3.98	4.11	4.32	4.49	4.77	4.98
	0.45	3.05	3.14	3.22	3.33	3.42	3.53	3.68	3.80	4.00	4.15	4.41	4.61
	0.50	2.84	2.63	3.00	3.10	3.19	3.29	3.43	3.54	3.72	3.87	4.11	4.30
	0.75	2.17	2.24	2.29	2.37	2.43	2.51	2.62	2.70	2.84	2.95	3.14	3.28
	1.00	1.79	1.85	1.89	1.96	2.01	2.09	2.16	2.23	2.35	2.44	2.69	2.71
	1.25	1.54	1.59	1.63	1.68	1.73	1.78	1.86	1.92	2.02	2.10	2.23	2.33
	1.50	1.37	1.41	1.44	1.49	1.53	1.58	1.65	1.70	1.79	1.86	1.97	2.07
	1.75	1.23	1.27	1.30	1.35	1.38	1.43	1.49	1.54	1.62	1.68	1.78	1.86
	2.00	1.13	1.16	1.19	1.23	1.26	1.31	1.36	1.40	1.48	1.54	1.63	1.70
	2.25	1.04	1.08	1.10	1.14	1.17	1.21	1.26	1.30	1.37	1.42	1.51	1.58
	2.50	0.97	1.00	1.02	1.06	1.09	1.12	1.17	1.21	1.27	1.32	1.40	1.47
	3.00	0.85	0.89	0.91	0.94	0.96	1.00	1.04	1.07	1.13	1.17	1.24	1.30
	3.50	0.78	0.80	0.82	0.85	0.87	0.90	0.94	0.97	1.02	1.06	1.12	1.17
4.00	0.71	0.73	0.75	0.78	0.80	0.82	0.86	0.88	0.93	0.97	1.03	1.07	
4.50	0.66	0.68	0.69	0.72	0.74	0.76	0.79	0.82	0.86	0.90	0.95	0.99	
5.00	0.61	0.63	0.65	0.67	0.69	0.71	0.74	0.76	0.80	0.83	0.88	0.93	
7.00	0.49	0.50	0.52	0.53	0.55	0.57	0.59	0.61	0.64	0.67	0.71	0.74	
10.0	0.39	0.40	0.41	0.42	0.43	0.45	0.47	0.48	0.51	0.53	0.56	0.58	
20.0	0.24	0.25	0.26	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.35	0.37	

a Adapted from Suarez.

b The adjusted sodium adsorption ratio (adj RNA) is a modification of the SAR procedure. It has long been recognized that calcium in the soil-water is not constant. The calcium concentration at equilibrium depends on both the concentration in the applied water and also the dissolution from soil-calcium or precipitation from soil-water. The effect is by soil-water salinity and the concentration of calcium, bicarbonate, and dissolved carbon dioxide. The effects are reflected in the Ca_x value.

c The adjusted sodium adsorption ratio includes the effects of the factors noted in the above footnote and more correctly predicts the sodium hazard and potential infiltration problem caused by water quality.