

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

TENTATIVE ADDENDUM NO. 1 TO ORDER NO. R9-2005-0258

**AN ADDENDUM PRESCRIBING REQUIREMENTS FOR THE DISCHARGE AND
USE OF RECYCLED WATER FOR LANDSCAPE IRRIGATION AT
SKYLINE RANCH COUNTRY CLUB
SAN DIEGO COUNTY**

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

1. Order No. R9-2005-0258 establishes waste discharge requirements for the disposal by Skyline Ranch Country Club, LLC. (hereinafter Discharger) of up to 0.030 million gallons per day (MGD) of undisinfected secondary recycled water to a 15-acre field that has restricted access to the public.
2. On May 21, 2007, the Discharger submitted a Report of Waste Discharge, requesting modification of Order No. R9-2005-0258 to prescribe requirements for the discharge of up to 0.045 MGD of disinfected tertiary recycled water and its use for landscape irrigation of the golf course at the Skyline Ranch Country Club (SRCC). This project will reduce demand for imported water supplied by Valley Center Municipal Water District to the Discharger. The Report of Waste Discharge, which included the Title 22 Engineering Report, was deemed complete on May 1, 2008.
3. The upgrade of the SRCC treatment plant to tertiary treatment included converting the activated sludge process to a membrane bioreactor (MBR) system that utilizes membrane filtration in place of clarification, installing of a chlorine disinfection unit, and constructing an emergency storage facility. As documented in the Report of Waste Discharge, the upgraded treatment facility has a hydraulic capacity of 0.045 MGD, under normal operating conditions. A new recycled water pipeline was installed to direct the tertiary effluent to the golf course.
4. The Title 22 Engineering Report for the project, prepared by Invirotreat Inc., business management consultants for the Discharger, has been approved by the Department of Public Health.
5. The Department of Public Health has accepted the Tracer Study Protocol for the project, finding that it includes acceptable methods and procedures to determine the Modal Contact Time (MCT).
6. This Regional Board, acting in accordance with Section 13244 of the California Water Code, adopted the Water Quality Control Plan for the San Diego Basin (9), (hereinafter Basin Plan) on September 8, 1994. The Basin Plan was approved by

the State Water Resources Control Board on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State Water Resources Control Board. The Basin Plan contains beneficial uses and water quality objectives.

7. A discharge in compliance with Order No. R9-2005-0258 as amended by this Addendum will be consistent with the standards, policies, and regulations established in the Basin Plan for the achievement of water quality objectives by recycled water dischargers.
8. In establishing the requirements contained herein the Regional Board considered factors including, but not limited to, the following:
 - a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose,
 - b. Other waste discharges,
 - c. The need to prevent nuisance,
 - d. Past, present, and probable future beneficial uses of the hydrologic subunits under consideration,
 - e. Environmental characteristics of the hydrologic subunits under consideration,
 - f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area,
 - g. Economic considerations,
 - h. The need for additional housing within the region, and
 - i. The need to develop and use recycled water.
9. In accordance with the Memorandum of Agreement between the Department of Public Health and the State Water Resources Control Board on the use of recycled water, this Order incorporates any conditions of approval submitted as part of the Department of Public Health's recommendations into water recycling requirements proposed for adoption by this Regional Board.
10. The Regional Board considered all environmental factors associated with the treatment and use of recycled water at Skyline Ranch Country Club. A draft Negative Declaration was circulated for public comment as required by California Environmental Quality Act (CEQA). No significant environmental effects were identified and the Negative Declaration for the project was certified by the Regional Board on November 12, 2008.
11. The Regional Board has notified the Discharger and all known interested parties of its intent to amend Order No. R9-2007-0038 for the use of recycled water by the Discharger.
12. The Regional Board in a public meeting, heard and considered all comments pertaining the proposed discharge of recycled water.

IT IS HEREBY ORDERED THAT, Skyline Ranch Country Club LLC. (hereinafter Discharger), in order to meet the provisions contained in Division 7 of the California Water Code and Regulations adopted thereunder, shall comply with Order No. R9-2007-0038 as supplemented with the following requirements for the discharge and use of disinfected tertiary effluent:

I. Discharge Specifications

1. Effluent from the Skyline Ranch Country Club wastewater treatment facility discharged for recycled water purposes shall be treated to the level of disinfected tertiary, in conformance with all applicable provisions of California Code of Regulations, Title 22, Division 4, Chapter 3 (Water Recycling Criteria) for the appropriate type of recycled water use (currently Sections 60303 through 60307, 60320, and 60320.5).
2. The median concentration of total coliform bacteria measured in the disinfected tertiary recycled water shall not exceed a most probable number (MPN) of 2.2 per 100 milliliter (mL), 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 an MPN of 23 per 100 mL in more than one sample in any 30-day period. No sample shall exceed a MPN of 240 total coliform bacteria per 100 mL.
3. The chlorine disinfection process shall provide a CT (chlorine concentration times modal contact time) value of not less than 450 milligram-minute (mg-min)/liter at all times with a modal chlorine contact time of at least 90 minutes based on peak dry weather design flow.
4. The turbidity of filtered recycled water shall not exceed any of the following:
 - (a) An average of 2 Nephelometric Turbidity Unit (NTU) within a 24-hour period;
 - (b) 2 NTU daily average, 5 NTU more than 5 percent of the time, or
 - (c) 10 NTU at any time.
5. A coagulation system shall be used whenever the plant is producing tertiary treated wastewater for unrestricted use. For the purpose of maintenance and repair of the system, the Discharger is allowed to have the coagulation system off-line for short periods of time (up to 30 minutes for each occurrence), when the turbidity of the influent to the tertiary treatment plant is less than 5 NTU.

Coagulation need not be used as part of the treatment process provided the turbidity of the influent to the filters does not exceed 5 NTU more than 5 percent of the time.

II. Recycled Water Use Provisions

1. The Discharger shall designate a recycled water supervisor who is responsible for the recycled water system. Specific responsibilities of the recycled water supervisor, at a minimum, shall include the following:
 - a. Proper installation, operation and maintenance of the irrigation system;
 - b. Control of the on-site piping to prevent any cross-connections with potable water supplies;
 - c. Development of and implementation of a set of procedures to verify on an ongoing basis that cross-connections have not occurred between potable water supplies and recycled water supplies;
 - d. Routine inspection and maintenance of backflow prevention devices installed to protect potable water supplies, consistent with section 7605 of Title 17, California Code of Regulations; and
 - e. General responsibilities to ensure compliance with the General Order, complete and continuous implementation of any Best Management Practices identified as necessary to prevent potential hazards to public health.

2. A copy of the facility operations manual shall be maintained at the treatment facility and shall be available to operation personnel and the Regional Board representatives 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:
 - a. Alarm set points for secondary turbidity, tertiary turbidity, and chlorine residual once established in the Reliability Plan described in Section D.3,
 - b. Levels at which flow will be diverted for secondary turbidity, tertiary turbidity, and chlorine residual once established in the Reliability Plan described in Section D.3,
 - c. When to divert flow for high daily and weekly median total coliform,
 - d. When the authorities (Department of Public Health, County of San Diego Department of Environmental Health, and Regional Board) will be notified of a diversion,
 - e. Names and numbers of those authorities to be notified in case of a diversion, and
 - f. Frequency of calibration for turbidimeters and chlorine residual analyzers.

3. Use or installation of hose bibs on any irrigation system presently operating or designed to operate with recycled water, regardless of the hose bib construction or identification, is prohibited.

4. Application of waste constituents to the use area shall be at reasonable agronomic rates to preclude creation of a nuisance and minimize degradation of groundwater, considering soil, climate, and nutrient demand.
5. The seasonal nutritive loading of the Use Areas including the nutritive value of organic and chemical fertilizers and of the recycled water, shall not exceed the nutritive demand of the landscape.
6. Land application areas that are spray irrigated and allow public access shall be irrigated during periods of minimal use (typically between 9 p.m. and 6 a.m.). Consideration shall be given to allow maximum drying time prior to subsequent public use.
7. All reclamation equipment, pumps, piping, valves, and outlets shall be appropriately marked to differentiate them from potable facilities. All reclamation distribution system piping shall be purple or adequately wrapped with purple tape per section 116815(a) of the California Health and Safety Code.
8. Except as allowed under section 7604 of Title 17, California Code of Regulations, no physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water. Supplementing reclaimed water with potable water shall not be allowed except through an air-gap separation, or if approved by the Department of Public Health, a reduced pressure principle backflow device.
9. There shall be at least a ten foot horizontal and one foot vertical separation at crossings between all pipelines transporting reclaimed water and those transporting domestic supply, with the domestic supply above the reclaimed water pipeline, unless approved by the Department of Public Health.
10. All recycled water valves, outlets, and quick couplers should be of a type or secured in a manner that only permits operation by authorized personnel.
11. Any equipment or facilities, such as tanks, temporary piping or valves, and portable pumps, which have been used with recycled water should be cleaned and disinfected before removal from the approved use area for use at another job site.
12. The main shutoff valve downstream of the recycled water meter shall be tagged with a recycled water warning sign, and shall be equipped with an appropriate locking device to prevent unauthorized operation of the valve.

13. Signs with proper wording (in English and Spanish) of a size no less than four inches high by eight inches wide shall be placed at all areas of public access and around the perimeter of all areas of recycled water use or conveyance to alert the public of the use of recycled water. All signs shall display an international symbol similar to that shown in Attachment A and present the following wording:
"RECYCLED WATER—DO NOT DRINK"
"AGUA DE DESPERDICIO RECLAMADA—POR FAVOR NO TOME"
14. Recycled water shall be managed to avoid contact with workers. Employees and eating areas shall be protected against any contact with recycled water spray, mist, and runoff during the chemical stabilizer applications by water trucks with special rear spread sprayers or by hand when using commercial-grade hoses.
15. Best Management Practices (BMPs) shall be implemented to achieve a safe and efficient irrigation system. A list of some example BMPs applicable for many uses of recycled water for landscape irrigation is included in Attachment A.
16. Recycled water shall not be allowed to escape from the authorized use areas by airborne spray or by surface flow except in minor amounts such as that associated with BMPs for good irrigation practices.
17. Areas irrigated with recycled water shall be managed to prevent ponding and conditions conducive to the proliferation of mosquitoes and other disease vectors, and to avoid creation of a public nuisance or health hazard. The following practices shall be implemented, at a minimum:
 - a. Irrigation water must infiltrate completely within a 48-hour period.
 - b. Ditches receiving irrigation runoff, not serving as wildlife habitat, shall be maintained free of emergent, marginal, and floating vegetation.
 - c. Low-pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store recycled water.
18. There shall be no application of recycled water within 50 feet, and storage of recycled water within 100 feet of a domestic well, unless approved otherwise by the Department of Public Health. There should be no application of recycled water within 50 feet of surface waters.

III. MONITORING & REPORTING REQUIREMENTS

1. Pursuant to California Water Code section 13529.2, any person who, 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 2.2 recycled water or 1,000 gallons or more of recycled water that is treated at a level less than disinfected tertiary 2.2 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 this Regional Board in accordance with reporting requirements in Standard Provision F.6.
2. Disinfected tertiary treated wastewater for unrestricted use shall be continuously sampled for turbidity using a continuous turbidity meter and recorder at a point prior to filtration and again following filtration. Turbidity measurements shall be based on a reading and recording of the turbidity strip charts or computer records at four-hour intervals at least once per day. Compliance with the daily average operating turbidity shall be determined by averaging the results of all four-hour turbidity samples read during the day.
3. The Discharger shall conduct periodic inspections of the reuse area to monitor and assure compliance with conditions of this Order. The Discharger shall also conduct regular inspections to assure cross connection are not made with potable water systems and air-gap devices are installed and operable.
4. Samples of the effluent shall be collected at a point downstream of the disinfection process, but prior to any dilution.
5. The Discharger shall determine the combined volume of recycled water used at the use site each calendar month in units of million gallons and report this volume quarterly.

6. The Discharger is responsible for monitoring and reporting in accordance with the following criteria:

Effluent Monitoring Requirements

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency ¹
Turbidity ^{2,3}	NTU	Continuous	Continuous	Quarterly
Chlorine Contact Time (CT) ⁴	Mg-min/L	Calculated	Continuous	Quarterly
Total Chlorine Residual ⁵	Mg/L	Continuous	Continuous	Quarterly
Total Coliform ⁶	MPN/ 100 ml	Continuous	Continuous	Quarterly

¹ Quarterly is defined as a period of three consecutive calendar months beginning on January 1, April 1, July 1, or October 1.

² Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours.

³ Effluent 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 by averaging the recorded turbidity levels at a minimum of four-hour intervals over a 24-hour period. Compliance with the turbidity standard of not 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 one sample every 1.2 hours may be substituted until the turbidity meter and/or recorder is fixed. The Discharger shall report monthly results of four-hour turbidity readings, average effluent turbidity (24-hours), 95 percentile effluent turbidity (24-hours), and the daily maximum turbidity (daily being defined as the 24-hour period from 12 am to 12 am). Continuous turbidity monitoring must also be provided prior to filtration to ensure adequate process control, and automatic actuated coagulant feed when the turbidity of the secondary treated effluent is greater than 10 NTU.

⁴ 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.

⁵ Chlorine concentrations shall be recorded by a continuous recording meter at a location in the pipeline where the effluent has experienced 90 minutes or more of modal contact time at maximum flow. Minimum daily chlorine residual shall be reported monthly.

⁶ 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 total coliform bacteria monitoring, running 7-day median determination, and maximum daily coliform reading in each of previous 12 months shall be reported monthly.

IV. NOTIFICATIONS

1. This Order becomes effective on the date of adoption by the Regional Board.

I, John H. Robertus, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Diego Region, on November 12, 2008.

Tentative

JOHN H. ROBERTUS
Executive Officer

ATTACHMENT A
RECYCLE WATER USE SIGNAGE
FOR
ADDENDUM NO. 1 TO ORDER NO. R9-2005-0258



ATTACHMENT B

BEST MANAGEMENT PRACTICES FOR RECYCLED WATER USED FOR LANDSCAPE IRRIGATION

TENTATIVE ADDENDUM NO. 1 TO WATER QUALITY ORDER NO. R9-2005-0258

1. GENERAL OPERATIONAL CONTROLS:

- a. The use of recycled water must be limited to the areas designated and approved
- b. All recycled water valves and outlets shall be properly tagged to warn the public and employees that the water is not safe for drinking.
- c. 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 Chapter 7.9, section 4049.54 of the California Health and Safety Code.
- d. Where feasible, different piping materials should be used to assist in water system identification.
- e. All recycled water valves, outlets and sprinkler heads should be of a type that can only be operated by designated personnel.
- f. Only quick couplers that differ from those used on the potable water system shall be used on the portions of the recycled water piping system in areas subject to public access.
- g. The recycled water piping system shall not include any hose bibs. The use or installation of hose bibbs on any on-site water system that presently operates or is designed to operate with recycled water, regardless of the hose bibb style, construction or identification is strictly prohibited.
- h. No physical connection shall be made or allowed to exist between any recycled water system and any separate system conveying potable water.
- i. The use of recycled water shall at no time create odors, slime, deposits, become a public or private nuisance or create a trespass of any kind.
- j. The use area shall be maintained to prevent the breeding of flies, mosquitoes or other vectors.
- k. Reclaimed water facilities shall be operated in accordance with best management practices (BMP's) to prevent direct human consumption of reclaimed water and to minimize misting, ponding, and runoff. BMP's shall be implemented that will minimize both public contact and discharge onto areas not under customer control.
- l. Customers shall ensure that all recycled water facilities are maintained, operated and repaired at all times in a manner that does not cause illness or injury to any person and in a manner that does not cause damage or injury to the real or personal property of any person or entity, including the District.

2. WORKER/PUBLIC PROTECTION:

- a. Workers, residents, and the public shall be made aware of the potential health hazards associated with contact or ingestion of recycled water, and should be educated about proper hygienic practices to protect themselves and their families.

- b. Workers and others must be notified that recycled water is in use, through the posting of signs, etc.
- c. The following measures should be taken to minimize contact with recycled water:
 - (1) Workers/public should not be subjected to recycled water sprays.
 - (2) Workers should be provided with the appropriate clothing during prolonged contact with recycled water.
- d. Potable drinking water should be provided for workers.
- e. Toilet and washing facilities should be provided.
- f. Precautions should be taken to avoid contact with food and food should not be taken into areas that are still wet with recycled water.
- g. A first aid kit should be available on site, to prevent cuts and other injuries to contact recycled water.

3. GENERAL IRRIGATION USES:

- a. All windblown spray and surface runoff of reclaimed water applied for irrigation onto property not owned or controlled by the discharger or reclaimed water user shall be prevented by implementation of BMP's.
- b. Irrigation with reclaimed water shall be during periods of minimal human use of the service area. Consideration shall be given to allow an adequate dry-out time before the irrigated area will be used by the public.
- c. 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. 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.
- d. 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.

4. EFFICIENT IRRIGATION:

The following methods of irrigation management should be applied to reduce run off, ponding and over spray. When followed, these methods will result in uniform irrigation and efficient operation.

- a. Hardware: All irrigation systems must have the appropriate equipment/hardware for the application.
 - (1) Install irrigation system according to the design.
 - (2) Make sure all sprinkler heads are uniform in brand, model and nozzle size. Where different arcs are needed at the same station, match precipitation rates by changing nozzles.

- (3) Measure spacing between sprinkler heads. Place heads per manufacturer's recommendations.
- (4) Where lower precipitation rates are required, such as on slopes, reduce nozzle size and spray angle per manufacturer's recommendations.
- (5) Install booster pumps to increase pressure where needed.
- (6) Install pressure reducers to decrease pressure where needed, often on steep hillsides where main lines run downhill.
- (7) Make sure piping is sized to transmit water in the quantity demanded by the system.
- (8) Use check valves either in-line or built into the sprinkler head assembly to virtually eliminate low head drainage after the valve has closed. THESE DEVICES SUBSTANTIALLY REDUCE RUN OFF AND PONDING FROM INDIVIDUAL SPRINKLER HEADS.
- (9) Use automatic flow control devices that shut down a system if a break or other similar high flow/low pressure situation develops during irrigation. THESE DEVICES CAN SAVE SIGNIFICANT AMOUNTS OF WATER AND ELIMINATE RUN OFF OR PONDING IF A BREAK SHOULD OCCUR.
- (10) The use of centralized control systems or controllers that measure or can be programmed to use evaporation rates, or systems that use controls such as moisture sensors is recommended.

b. Maintenance: Maintenance is often the most overlooked irrigation system component. Perform the following routinely, and to fix a problem with the irrigation system.

- (1) Adjust sprinkler heads so they achieve 80 percent head to head coverage though out their intended arc. There should be no obstruction that would interfere with the free rotation and smooth operation of any sprinkler, such as trees, tall grass, shrubs, signs, etc. The system should be tested during the daytime so adjustments can be made.
- (2) Adjust valves or pressure regulators so that the systems are operating at the pressure required by the sprinkler heads or emitters. Test pressures periodically with a pressure gauge to maintain appropriate pressure levels.
- (3) Routinely test the accuracy of time clocks. Have the time clock recalibrated or repaired as necessary.
- (4) Repair or replace broken risers, sprinklers, valves, etc. as soon as they are discovered. Replace with appropriate make and model of equipment to maintain uniformity through out the system.
- (5) Routinely check backflow devices, pumps, etc. for leaks and repair or replace as necessary.
- (6) Routinely clean screens and backwash filters to keep systems operating optimally.

- c. Management: System management determines; 1) the appropriate duration of the irrigation cycle, and 2) the frequency at which irrigation occurs.
- (1) Duration: The duration or length of an irrigation cycle (run time) should be long enough to fill up the root zone reservoir. If total run times are longer than required, then deep percolation losses occur. There are exceptions to this general rule. A common and important exception to this rule is to reduce levels of salts in the root zone reservoir. This is accomplished by applying additional water to force salts down past the root zone. This process, called leaching, is a common use of irrigation water. Run times are also dependent on distribution uniformity (DU). DU is a measurement of how evenly water is applied to the irrigated area. Run times are reduced by higher levels of DU.
 - (2) Frequency: The frequency of an irrigation cycle should be as often as necessary to meet the water requirements of the vegetation. This is determined by measuring the amount of moisture remaining in the root zone reservoir between irrigation cycles. When an appropriate moisture level is determined, the irrigation cycles should be scheduled to ensure watering frequency is such to maintain that level.
 - (3) Practices for optimizing management of an irrigation system:
 - (a) Use tensiometers, gypsum blocks, soil probes, the "feel method", and or the California Irrigation Management Information System to estimate soil moisture levels. Inspect and maintain regularly to ensure accuracy and reliability.
 - (b) Use automatic rain shut-off devices to reduce irrigation if significant rainfall occurs.
 - (c) Use multiple rain shut-off devices to reduce ponding if precipitation rates are higher than the infiltration rate of the soil.
 - (d) Irrigate in the evening or early morning to avoid the heat and/or windy parts of the day. This will reduce evaporation losses and minimize windblown spray from entering unintended areas.
 - (e) Group irrigated areas into zones of similar water use. For example, irrigate grass areas separately from shrub areas, sunny areas separately from shady areas, etc.
 - (f) As needed, aerate the soil to improve infiltration of air and water into the soil.
 - (g) Provide as much flexibility as possible into the design of the irrigation system. Built in ability to make changes as necessary can add to the efficiency of the system.
 - (h) Perform good horticultural practices; fertilization, mowing, de-thatching, aeration, and pest control, as necessary to create the best growing environment for landscape vegetation.

Because irrigation systems have constant wear and tear, periodic checks and adjustments are all part of good landscape water management programs.