California Regional Water Quality Control Board
Santa Ana Region

Order No. R8-2008-0058
Amending Order No. R8-2004-0002

Producer/User Water Recycling Requirements

for the

Orange County Water District

Interim Water Factory 21 and Groundwater Replenishment System
Groundwater Recharge and Reuse at
Talbert Gap Seawater Intrusion Barrier and Kraemer/Miller Recharge Basins

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The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Board), finds that:

1. On March 12, 2004, the Regional Water Quality Control Board adopted Order No. R8-2004-0002, prescribing Producer/User Water Recycling Requirements for the Orange County Water District's (OCWD) (hereinafter producer) Interim Water Factory 21 (Interim WF-21) and Groundwater Replenishment System (GWRS) for groundwater recharge and reuse of recycled water at the Talbert Gap Seawater Intrusion Barrier and at Kraemer/Miller Recharge Basins in Orange County.

2. OCWD was the owner and operator of Interim Water Factory 21, which was secured and demolished in 2006. OCWD is the owner and operator of GWRS.

3. In accordance with the recommendations from the California Department of Public Health (CDPH), Order No. R8-2004-0002 requires that no domestic drinking water wells shall be allowed within a buffer zone defined by the area less than 500 feet and 6 months underground travel time from Kraemer/Miller Basins. Furthermore, Order No. R8-2004-0002 specifies that a numerical model, tracer, or other method shall be used to determine the underground travel time, and that if a tracer is used, the tracer shall be determined prior to start-up.

4. Order No. R8-2004-0002 includes the finding that, based on groundwater tracer studies conducted by Lawrence Livermore National Laboratory (LLNL) in 1998, GWRS recycled water recharged at Kraemer/Miller basins will flow towards the west/southwest, towards the existing domestic production well A-26 (which was owned and operated by the City of Anaheim but has since been destroyed), and the La Jolla Well (SCWC-PLJ2), which is owned and operated by Golden State Water Company (GSWC) (formerly Southern California Water Company (SCWC)). Domestic water Well SCWC-PLJ2 is located approximately 5,300 feet from Kraemer Basin, the closer of the two GWRS recharge basins. The LLNL tracer studies estimated that the underground travel time from Kraemer Basin to Well SCWC-PLJ2 is 6 months. Because the arrival time to Well SCWC-PLJ2 is at the 6-month minimum travel time requirement, Order No. R8-2004-0002 requires that SCWC-PLJ2 be taken out of production and replaced outside of the 6-month minimum travel time buffer zone prior to the time that the recycled water spread at Kraemer/Miller Basins reaches Well SCWC-PLJ2.

5. Recently, a new condition has arisen that is likely to affect the Kraemer/Miller Basin recharge water flow paths such that Well SCWC-PLJ2 will be outside the minimum 6-month travel time buffer zone. OCWD has installed and begun operating a new recharge basin, La Jolla Basin, which is located along the groundwater flow path between Kraemer Basin and Well SCWC-PLJ2. OCWD recharges Santa Ana River water or imported water at La Jolla Basin, but not recycled water. The operation of La Jolla Basin is expected to create a localized recharge mound that will deflect or slow incoming groundwater flow coming from the direction of Kraemer Basin. It is anticipated that recharge at La Jolla Basin will be sufficient to slow or deflect GWRS recycled water recharged at Kraemer Basin such that the expected travel time to Well SCWC-PLJ2 will exceed 6 months.

6. On January 11, 2008, OCWD sent a letter to the CDPH with a copy to the Regional Board documenting the artificial tracer test that OCWD is conducting to empirically determine the travel time for water recharged in Kraemer Basin prior to its extraction at Well SCWC-PLJ2. The tracer test will define the 6-month underground travel time boundary from Kraemer Basin under the new hydrologic conditions created by La Jolla Basin.

7. On January 17, 2008, the CDPH sent a letter to OCWD granting conditional approval of the tracer test protocol and delivery of GWRS recycled water to Kraemer and Miller Basins. The CDPH conditions of approval for the tracer test and delivery of GWRS recycled water to Kraemer and Miller Basins include operating, monitoring, and reporting requirements. In addition, CDPH specified the condition that Well SCWC-PLJ2 must stop pumping to the potable water distribution system and instead be pumped and wasted for the balance of the tracer test before the expected arrival of GWRS recycled water if monitoring of upgradient wells indicates that GWRS recycled water will reach Well SCWC-PLJ2 in 6 months or less. Since the LLNL tracer studies were completed, OCWD has installed and begun operating a new recharge basin, La Jolla Basin, which is located along the groundwater flow path between Kraemer/Miller Basins and Well SCWC-PLJ2. The recharge of Santa Ana River water or imported water at La Jolla Basin is expected to slow or deflect GWRS recycled water recharged at Kraemer/Miller Basins such that the expected travel time to Well SCWC-PLJ2 will exceed 6 months. A new tracer study will be conducted to determine the underground travel time from Kraemer Basin to Well SCWC-PLJ2 under the new conditions created by La Jolla Basin.

8. It is appropriate to amend Order No. R8-2004-0002 to reflect the January 17, 2008 conditions of approval specified by CDPH and to allow the ongoing use of SCWC-PLJ2 for domestic production provided that the OCWD tracer test demonstrates that the underground travel time from Kraemer Basin to Well SCWC-PLJ2 exceeds 6 months. In addition, it is appropriate to amend the Order to include changes to the monitoring and reporting program No. R8-2004-0002 that were recommended by the producer for clarification purposes.

9. In compliance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), OCWD prepared and certified an Environmental Impact Report (EIR) for the Interim WF 21 and GWRS. The EIR identified no significant adverse impact to water quality as a result of the use of recycled water. The EIR for the Interim Water Factory 21 and GWRS was certified and approved by the OCWD Board of Directors on March 24, 1999. The project involves the amendment of waste discharge requirements for an existing facility and, as such, is exempt from the California Environmental Quality Act (Public Resources Code, Section 21100 et. seq.) in accordance with Section 15301, Chapter 3, Title 14, California Code of Regulations.

10. The Board has notified the producer and other interested agencies and persons of its intent to amend the producer/user water recycling requirements set forth in Order No. R8-2004-0002 and has provided them with an opportunity to submit their written views and recommendations.

11. The Regional Board, in a public meeting, heard and considered all comments pertaining to these water-recycling requirements.

IT IS HEREBY ORDERED that Order No. R8-2004-0002 be amended as follows:

1. Order No. R8-2004-0002, page 8, replace Finding 27., with the following:

    27. Based on groundwater tracer studies conducted by Lawrence Livermore National Laboratory (LLNL) in 1998, GWRS recycled water recharged at Kraemer/Miller basins will flow towards the west/southwest, towards the domestic production well A-26 (which was owned and operated by the City of Anaheim but has since been destroyed), and the La Jolla Well (SCWC-PLJ2), which is owned and operated by Golden State Water Company (GSWC) (formerly Southern California Water Company (SCWC)). Domestic water Well SCWC-PLJ2 is located approximately 5,300 feet from Kraemer Basin, the closer of the two GWRS recharge basins. The LLNL tracer studies estimated that the underground travel time from Kraemer Basin to Well SCWC-PLJ2 is 6 months. Because the arrival time to Well SCWC-PLJ2 is at the 6-month minimum travel time requirement, Order No. R8-2004-0002 requires that SCWC-PLJ2 be taken out of production and replaced outside of the 6-month minimum travel time buffer zone prior to the time that the recycled water spread at Kraemer/Miller Basins reaches Well SCWC-PLJ2. However, since the LLNL tracer studies were completed, OCWD has installed and begun operating a new recharge basin, La Jolla Basin, which is located along the groundwater flow path between Kraemer/Miller Basins and Well SCWC-PLJ2. The recharge of Santa Ana River water or imported water at La Jolla Basin is expected to slow or deflect GWRS recycled water recharged at Kraemer/Miller Basins such that the expected travel time to Well SCWC-PLJ2 will exceed 6 months. A new tracer study will be conducted to determine the underground travel time from Kraemer Basin to Well SCWC-PLJ2 under the new conditions created by La Jolla Basin.

2. Order No. R8-2004-0002, page 8, replace Finding 28., with the following:

    28. OCWD has installed five groundwater monitoring wells, including one new multi-depth monitoring well, west of Kraemer/Miller Basins along the groundwater flow path towards domestic water supply well SCWC-PLJ2.

3. Order No. R8-2004-0002, Section E. Groundwater Monitoring Well Requirements, page 18, modify Paragraph 3., as follows and delete footnote 12:

3. At a minimum, one new multi-depth groundwater monitoring well, AMD-12, shall be constructed for the GWRS west of Kraemer/Miller Basins along the groundwater flow path toward domestic water supply well SCWC-PLJ2 to monitor water quality in multiple zones of the Main Aquifer. Well AMD-12 shall be located approximately 1,600 feet away from the recharge operation, or about 30% of the distance (approximately 2.5 months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2. In addition, two existing monitoring wells, AM-7 and AM-8[11], located west of Kraemer/Miller Basins along the flow path toward well SCWC-PLJ2, shall be regularly monitored. If the results of tracer tests specified in Section J. Provisions, Paragraph 21 show that the travel time to well SCWC-PLJ2 is six months or less, then the well must be taken out of service for domestic production.

4. Order No. R8-2004-0002, page 18, modify Footnote 11, as follows:

Footnote 11: AM7 is located at about 22% of the distance (approximately 2 months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2. AM-8 is located at approximately 75% of the distance (approximately three months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2.

5. Order No. R8-2004-0002, page 19, Section F. Buffer Zone Specifications in Recharged Groundwater Basins, modify Paragraph 4., as follows:

4. At Kraemer/Miller Basins, no domestic drinking water wells shall be allowed within a buffer zone defined by the area less than 500 feet and 6 months underground travel time from Kraemer/Miller Basins. Should the data collected in multi-depth monitoring wells indicate that the tracer is not detected below particular depths within 6 months, it is appropriate to allow for a three-dimensional travel time boundary to be proposed that may allow for construction of deeper production well(s) at the SCWC-PLJ2 site and other sites in the future that intercept GWRS generated waters at a travel time greater than 6 months. Within 30 days of receipt of the final tracer study report, if the tracer study shows that the travel time in certain aquifers may be less than 6 months, then OCWD shall submit to the Regional Board, CDPH and Orange County Health Care Agency (OCHCA) a proposed three-dimensional buffer zone, representing the 6-month travel path of GWRS water. If the Regional Board, CDPH, and OCHCA approve the three-dimensional buffer zone, OCWD shall adopt a resolution that effectively prevents the use of groundwater for drinking water purposes within the area defined by the three-dimensional buffer zone and shall notify the Orange County Well Standards Advisory Board of its resolution to prevent construction of any domestic supply wells within the three dimensional buffer zone.

6. Order No. R8-2004-0002, page 28, Section J. Provisions, add the following new paragraph 21:

   21. The producer shall complete a tracer test following a protocol approved by the CDPH to determine the underground travel time from Kraemer Basin to well SCWC-PLJ2, which is the closest active downgradient domestic well. The tracer test shall be conducted with La Jolla Recharge Basin in operation to demonstrate its impacts, if any, on the underground travel time to SCWC-PLJ2 and the required 6-month buffer zone. Results of the tracer test shall be submitted to CDPH and the Regional Board for review and approval. Provided that the tracer test results show that the underground travel time from Kraemer Basin to well SCWC-PLJ2 will exceed 6 months, well SCWC-PLJ2 shall be allowed to remain in service as a domestic water production well. If the tracer test results show that the underground travel time from Kraemer Basin to well SCWC-PLJ2 will be 6 months or less, then well SCWC-PLJ2 shall be taken out of service.

7. M&RP No. R8-2004-0002, Section I.A., Sampling Requirements, modify Paragraphs 3., 4., and 5. as follows:

   3. Monthly samples shall be collected on any representative day of each month.

   4. Quarterly samples: shall be collected on any representative day of January, April, July, and October. Test results shall be reported in either micrograms/liter (µg/L) or milligrams/liter (mg/L) or nanograms/L (ng/L), as appropriate. For groundwater monitoring wells, quarterly samples shall be collected during the first two months of each quarter.

   5. Annual samples shall be collected in accordance with the following schedule:

8. M&RP No. R8-2004-0002, page 2, Section I.B., modify Monitoring Program for Influent Flow Table as follows:

Monitoring Program for Influent Flow				
Parameter	Sample Location	Units	Type of Sample	Minimum Frequency of Analysis
Influent Flow	Screening Influent or Microfiltration Feed	mgd	Flow meter/Totalizer	continuous
pH	Microfiltration Feed	pH units	recorder	continuous
Electrical Conductivity	Microfiltration Effluent	micromhos/cm	Grab	Quarterly
BOD_5	Screening Influent	mg/l	24-hr composite	quarterly
Total Suspended Solids	Screening Influent	"	"	"

9. M&RP No. R8-2004-0002, pages 3, Section I.C., Table I, delete monitoring for Oil and Grease.

10. M&RP No. R8-2004-0002, pages 3 and 5, Section I.C., Table I, move Perchlorate from "Unregulated Chemicals" in page 5 into "Inorganic Chemical" in page 3.

11. M&RP No. R8-2004-0002, page 5, Section I.C., Table I, delete Tentatively Identified Chemicals (TIC) from "Unregulated Chemicals".

12. M&RP No. R8-2004-0002, page 6, Section I.C., Table II, Minimum Frequency of Sampling and Analysis column, modify Table II as shown:

Table II	Units	Type of Sample	Minimum Frequency of Sampling and Analysis
Constituents			(See Note 1 below)
Aluminum	*mg/l*	grab	Annually
Color	*unit*	"	Annually
Copper	*mg/l*	"	"
Corrosivity	"	"	"
Foaming Agents (MBAS)	"	"	"
Iron	"	"	"
Manganese	*mg/l*	grab	Annually
Methyl-*tert*-butyl ether (MTBE)	"	"	"
Odor—Threshold	"	"	"
Silver	"	"	"
Thiobencarb	"	"	"
Turbidity	*NTU*	on-line	continuous
Zinc	*mg/l*	grab	Annually

Note 1: Quarterly monitoring results may be used to fulfill the annual testing requirements.

13. M&RP No. R8-2004-0002, page 7, Section I.C., Paragraph 4., change CDHS to CDPH as follows:

    4. During the first two years of start up of operation of Interim WF 21 and GWRS, recycled water samples shall be collected and analyzed quarterly for endocrine disrupting chemicals and pharmaceuticals specified by the CDPH and using methods accepted by the CDPH. The results of this monitoring shall be submitted to the CDPH and the Regional Board quarterly. After two years operation of either the Interim WF 21 or GWRS, the quarterly monitoring program shall be reduced to annually upon the approval of CDPH and Regional Board's Executive Officer.

14. M&RP No. R8-2004-0002, page 8, modify footnote 6, 7 and 8 as follows:

    Footnote 6: This is a new multi-depth groundwater monitoring well. AMD-12, shall be constructed west of Kraemer/Miller Basins along the groundwater flow path toward domestic water supply well SCWC-PLJ2 to monitor water quality in multiple zones of the Main Aquifer. Well AMD-12 shall be located approximately 1,600 feet away from the recharge operation, or about 30% of the distance (approximately 2.5 months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2.

    Footnote 7: AM-7 is located at about 22% of the distance (approximately 2 months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2.

    Footnote 8: AM-8 is located at approximately 75% of the distance (approximately 3 months travel time) between Kraemer/Miller Basins and well SCWC-PLJ2.

15. M&RP No. R8-2004-0002, page 9, Section I.E., Groundwater Monitoring Program, Paragraphs 3. and 4., change CDHS to CDPH.

16. M&RP No. R8-2004-0002, page 9, Section I.E., Groundwater Monitoring Program, Footnote 11, change CDHS to CDPH.

17. M&RP No. R8-2004-0002, Section II. B. Annual Monitoring Reports, page 11, modify Item 1 as follows:

    1. By June 30 of each year, the Producer shall submit an annual report to the Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. The Producer shall discuss the compliance record and a summary of corrective actions taken as a result of violations, suspensions of recharge, detections of monitored constituents and any observed trends, information on the travel of the recycled water, description of any changes in operation of any unit processes or facilities, and description of any anticipated changes, including any impacts on other unit processes.

18. M&RP No. R8-2004-0002, page 12, Section II.B., Paragraph 3., change CDHS to CDPH.

19. All other conditions and requirements of Order No. R8-2004-0002 shall remain unchanged.

I, Gerard J. Thibeault, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on July 18, 2008.

Gerard J. Thibeault
Executive Officer