

**State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

ORDER NO. R4-2003-0134

**WATER RECYCLING REQUIREMENTS
FOR THE
HARBOR WATER RECYCLING PROJECT - DOMINGUEZ GAP BARRIER PROJECT
(File No. 97-208)**

ISSUED TO

**City of Los Angeles Department of Water & Power
City of Los Angeles Department of Public Works
Los Angeles County Department of Public Works, and
Water Replenishment District of Southern California**

The California Regional Water Quality Control Board, Los Angeles Region (hereafter Regional Board) finds:

DISCHARGERS

1. The City of Los Angeles Department of Water and Power (LADWP) and the Water Replenishment District of Southern California (Water Replenishment District) propose to inject a major portion of the reverse osmosis treated recycled water (up to 5 million gallons per day, mgd) produced at the Harbor Water Recycling Project (HWRP) – advanced wastewater treatment facility (AWTF) located at the City of Los Angeles' Terminal Island Treatment Plant (TITP) into the Dominguez Gap Seawater Intrusion Barrier (Barrier). This proposed injection of recycled water is known as the Harbor Water Recycling Project - Dominguez Gap Barrier Project (hereinafter referred to as HWRP Barrier Project). The remainder of the reverse osmosis treated water is reused for nonpotable applications, such as irrigation and industrial applications.
2. The Water Replenishment District, a special district charged with the responsibility of replenishing and maintaining the groundwater quality of the Central and West Coast Groundwater Basins, currently purchases domestic/potable water (diluent water) from the Metropolitan Water District of Southern California (MWD) for injection into the Barrier.

Diluent water is water that **is not** treated wastewater and that is used to supplement the recycled water in the barrier. In addition, diluent water must be equivalent to potable water quality and be approved for use by the California State Department of Health Services (DHS) and the Regional Board.

3. The City of Los Angeles Department of Public Works (LAD Public Works) through its Bureau of Sanitation owns and operates the TITP. LADWP owns the HWRP, but the Bureau of Sanitation operates it. The LADWP is the purveyor of recycled water produced at HWRP's facility.

4. The Los Angeles County Department of Public Works (LA County DPW) owns, operates, and maintains the Barrier and has done so since 1971 by injecting treated domestic water from the MWD to prevent seawater intrusion into the West Coast Groundwater Basin. The amount of water injected has ranged between 2,200 to 9,550 acre-feet per year. In recent years, the annual average has been approximately 5,900 acre-feet of water for injection. The majority of injected water flows inland to replenish the aquifers, which are a source of municipal water supplies.

PURPOSE OF ORDER

5. On July 9, 1997, LADWP submitted a report of waste discharge (ROWD) and applied for water recycling requirements, pursuant to California Water Code Section 13522.5, for the HWRP Barrier Project. On June 20, 2002, the LADWP, as requested by this Regional Board, filed an updated ROWD.
6. This Order is the issuance of water recycling requirements (WRRs) to the four proponents (collectively referred hereinafter as Dischargers) described above for the HWRP Barrier Project, pursuant to California Water Code Section 13523.1. The Dischargers are individually and collectively responsible for compliance with the requirements in this Order. The nonpotable reuse of reverse osmosis recycled water for irrigation, industrial, and recreational is regulated under Board Order No. R4-2003-0025 adopted by this Regional Board on January 30, 2003.

TERMINAL ISLAND TREATMENT PLANT

7. TITP is a publicly owned treatment work (POTW) located at 445 Ferry Street, San Pedro, California, approximately 20 miles south of downtown Los Angeles (see Figure 1 for vicinity map). It was originally built in 1935 with a treatment process comprising of preliminary treatment and primary treatment with the effluent discharged into the Los Angeles Harbor. TITP was upgraded to secondary treatment employing the activated sludge process in 1977, and further upgraded to tertiary treatment by LAD Public Works installing tri-media filter, which consists of anthracite, silica sand, and high density sand in 1996. TITP has an average dry weather design treatment capacity of 30 mgd and peak design flow capacity of 50 mgd. For the last six years (1997 to 2002), sewage flow to the plant averaged about 16 mgd. The plant discharge of tertiary treated municipal wastewater to the Los Angeles Outer Harbor averaged about 16 mgd for the same period.
8. Discharge to the harbor has been regulated under the National Pollutant Discharge Elimination System (NPDES) Permit No. CA0053856 issued by this Regional Board. It is also subject to the State Water Resources Control Board's (State Board) Enclosed Bays and Estuaries Policy established in 1974. The policy requires POTW discharges to enclosed bays and estuaries to cease at the earliest practicable date. In 1977, this Regional Board ordered the City of Los Angeles to phase out the TITP discharge to the harbor at the earliest practicable date or demonstrate that the discharge enhances the quality of the receiving water. The City opted for the latter approach but was not successful in demonstrating that the TITP effluent enhances the water quality in the harbor. Therefore in 1977, this Regional Board issued Order No. 85-77 requiring the City to cease the TITP discharge to the harbor at the earliest practicable date.

9. On October 31, 1994, this Regional Board adopted Resolution No. 94-009, which approved the implementation of water recycling as a means to phase out the TITP discharge to the Los Angeles Harbor. The City agreed to initiate recycling of 6.75 mgd of secondary effluent for delivery of 5 mgd of product water to LADWP's Harbor Generating Station and the Barrier by December 1999 (Phase I), and adopt the goals of doubling the reuse of effluent 6 years after the start of Phase I (Phase II), and achieving total reuse by the year 2020 (Phase III).
10. TITP is located within the Los Angeles Coastal Plain, and the proposed recycled water use areas are within the West Coast Groundwater Basin, which is a part of the Los Angeles Coastal Groundwater Basin.

HARBOR WATER RECYCLING PROJECT (HWRP)

11. To implement Regional Board Resolution No. 94-009, the City has been constructing the HWRP in phases with the ultimate goal of producing 22.5 mgd recycled water for reuse in the Barrier and other applications, including irrigation, industrial, and recreational, regulated under Board Order No. R4-2003-0025. Table 1 presents the proposed quantity of recycled water to be produced for each phase.

Phase	Recycled Water (mgd)
I	5.0
II	12.0
III	22.5

The HWRP includes an AWTF, a pump station at TITP, and a transmission system to convey recycled water to users in the Los Angeles Harbor area. Construction of the AWTF for Phase I was completed in the spring of 2002. Delivery of recycled water to the Barrier is pending issuance of these WRRs.

SOURCE, TREATMENT, AND TRANSMISSION OF RECYCLED WATER

12. TITP treats wastewater from industrial, commercial and residential sources located in Terminal Island, San Pedro, Wilmington, and portions of Harbor City. Approximately 60 percent come from industrial/commercial sources and the remaining 40 percent from residential sources. In compliance with 40 Code of Federal Regulations Part 403 and the NPDES permits for TITP and other POTWs owned and operated by the City of Los Angeles, the City developed and has been implementing a pretreatment program. Two of the four primary objectives of the program are to prevent pass through of pollutants or cause interference in the operation of the POTWs by regulating the discharge of toxic pollutants to the POTWs. The program reduces the likelihood of toxic contamination of the effluent and provides reliability in the treatment process.
13. Treatment at TITP consists of preliminary, primary, secondary and tertiary treatment. Figure 2 depicts the flow diagram of the treatment process. Preliminary treatment at the headworks removes coarse particles and debris from the wastewater. The primary settling tanks remove the majority of the organic and inorganic suspended solids. Secondary treatment uses the activated sludge process and consists of aeration basins where most of the total organic

carbon is removed by microorganisms, followed by clarifiers that remove most of the microorganisms and suspended inorganic solids. Tertiary treatment consists of coagulation and filtration in conventional, deep bed, tri-media gravity filters. Tertiary treatment reduces settleable solids, suspended solids and turbidity in the wastewater.

Solids removed from primary and secondary treatments are pumped to the solids handling facility that includes air flotation, sludge blending, anaerobic digesters, centrifuges and sludge drying beds. Coarse solids and debris removed from preliminary treatment and dried sludge are hauled to a landfill that is permitted to accept such wastes, or the latter is beneficially reused in a manner that does not impact water quality.

14. For HWRP-Phase I, approximately 7.4 mgd of tertiary treated effluent will be pumped to the AWTF to produce 5 mgd of recycled water. The remaining tertiary treated effluent will continue to be discharged to the Los Angeles Harbor. Figure 3 presents the schematic of the treatment process for the Phase I AWTF. It is comprised of microfiltration, reverse osmosis, lime stabilization, and disinfection described as follows:
 - A. Microfiltration (MF): MF is used to pretreat the tertiary effluent prior to reverse osmosis (RO) for increased system reliability and reduced RO membrane fouling. The tertiary treated effluent is fed into automatic self-cleaning 500-micron strainers and then the flow is split into two parallel trains. Each train contains 5 parallel Memcor MF units. The MF units are periodically back washed to clean the membranes. The backwash is sent back to TITP's headworks for reprocessing.
 - B. Reverse Osmosis (RO): The MF filtrate is fed into two separate RO process trains that use thin film membranes. Each RO process train has two stages in series to achieve a guaranteed recovery rate of 80 percent with a rated operating recovery of 85 percent. The brine from the first stage is used as feed water for the second stage. The RO removes salts, minerals, metal ions, organic compounds, and microorganisms. The RO brine is dechlorinated and discharged through TITP's existing outfall in accordance with NPDES permit No. CA0053856, and Resolution No. 94-009.
 - C. Lime Stabilization: Product water from the RO trains is combined and lime is added to adjust the pH and reduce the potential for minerals to be leached from the cement lining used in the transmission pipeline, which would affect the integrity of the pipe lining.
 - D. Disinfection: Sodium hypochlorite is used for disinfection in a chlorine contact basin designed to provide a concentration-time value of 450 mg-minutes per liter with a modal contact time of 150 minutes for a flow of 5 mgd.
15. A product water pump station has been built for the HWRP-Phase I equipped with three pumps with constant speed drivers. The pump station is designed to pump 5 mgd with two pumps operating and the other pump on stand-by. Additional product water pumps will be installed for future HWRP Phases II and III.

The HWRP-Phase I recycled water transmission pipeline consists of approximately 18,000 linear feet of 36-inch and 24-inch diameter ductile iron and steel pipeline. Figure 4 depicts the pipeline alignment. The distribution lateral to the Barrier is a 12-inch diameter pipe. All HWRP pipelines and valves, except for the portion of the pipeline installed underwater within

the Los Angeles Harbor, are installed with purple identification tapes or purple polyethylene vinyl wraps according to “*Guidelines for Distribution of Nonpotable Water - American Water Works Association (AWWA) California-Nevada Section*” published on 1992.

16. The City of Los Angeles’ Bureau of Sanitation conducted a tracer study to determine the minimum modal contact time in the chlorine contact tank at nominal flow rates of 2.5 mgd and 5 mgd. These flow rates are proposed for the operation of the AWTF. LADWP submitted the report of the tracer study in October 16, 2002, to the Regional Board and DHS. Table 2 shows the results.

Table 2 – Results of the Tracer Study		
Nominal Flow Rate (mgd)	Actual Average Flow Rate (mgd)	Detention Time (minutes)
2.5	2.42	305
5.0	4.96	155

DOMINGUEZ GAP BARRIER PROJECT

17. The Dominguez Gap is part of the West Coast Groundwater Basin located in the southern portion of the Los Angeles River flood plain, lying between the Dominguez and Signal Hills belonging to the Los Angeles-San Gabriel Hydraulic area. Along the coast, the Dominguez Gap is bounded to the west by Palos Verdes Hills and to the northeast by low-lying Signal and Dominguez Hills. Figure 5 depicts the vicinity map of the Dominguez Gap.
18. Decades of over pumping caused the water levels in the West Coast Basin to drop, resulting in loss of groundwater storage capacity and intrusion of seawater into the potable aquifers. The Barrier began injecting water in 1971 to inhibit further degradation of the West Coast Basin drinking water aquifers due to seawater intrusion. To monitor the Barrier’s effectiveness, LA County DPW has been collecting water level and chloride data as part of its Barrier hydrologic and operations record. Since the Barrier began operation, the groundwater quality in the area has remained stable, with a slow increase in the concentrations of total dissolved solids (TDS), chloride, and other minerals over the years. Near the Barrier, the chloride concentrations have more variations, reflecting areas where both leakage of seawater through the Barrier and mitigation of seawater intrusion are occurring. These conditions have a direct correlation with the Barrier injection operation including the amount of water injected. Approximately 10 percent of the water injected into the Barrier flows seaward and prevent seawater intrusion; the rest migrates inland and replenishes depleted aquifers.
19. Historically, the Water Replenishment District has purchased potable imported water to supply LA County DPW’s recharge operations. Recently, with advances in water treatment technology, the Water Replenishment District began purchasing high quality recycled water to supplement potable supplies. In 1995, the LA County DPW began injection of a 50-50 percent blend of recycled water and diluent water into the West Coast Basin Barrier Project. Source of the recycled water is the secondary effluent from the City of Los Angeles Hyperion Treatment Plant, with West Basin Water Recycling Facility providing advanced treatment.
20. Currently, the Water Replenishment District purchases potable imported water for injection by the LA County DPW into the Barrier. For the ten-year period between 1985 to 1995, imported

water injected ranged from 4.4 to 7 mgd with a historic maximum of approximately 8.5 mgd. The objective of the HWRP Barrier Project is to replace up to 50 percent of the diluent water (with recycled water) currently injected into the Barrier. Therefore, this is a 50% recycled water contribution project.

21. The freshwater aquifers in the Dominguez Gap are located in the uppermost 1,800 feet of sediment, continuous in a southeast-northwest direction from the San Pedro Bay to the northern portions of the West Coast Basin. There are 5 aquifers in the Barrier area – the Gaspar, 200-Foot Sand (Gage), 400-Foot Gravel (Lynwood), Silverado (Upper Silverado), and the lower San Pedro (Lower Silverado) aquifers. The geological cross section of these aquifers is illustrated in Figure 6. There is hydraulic continuity between the Gaspar and 200-Foot Sand; between the 200-Foot Sand and 400-Foot Gravel; and between the 400-Foot Gravel and Silverado.
22. The Barrier is comprised of a line of 94 injection wells, 61 old, and 33 newly installed wells, connected by a common header along the south-facing coast of the West Coast Basin in the community of Wilmington, north of Terminal Island and west of the Los Angeles River. The well alignment extends eastward on E Street from the Palos Verdes Hills to the Dominguez Channel, where it turns towards the northeast along the western bank of the channel (see Figure 7 for the well alignment). Water is injected into the 200-Foot Sand in the east-west alignment of the Barrier, and into both the 400-Foot Gravel and 200-Foot Sand aquifers in the north-south alignment of the Barrier. Of the 94 injection wells, 20 are single injection wells, injecting only into the 200-Foot Sand aquifer. Another 35 are dual injection wells, injecting separately into the Gaspar/200-Foot Sand and 400-Foot Gravel aquifers. One composite well injects simultaneously into both the Gaspar/200-Foot Sand and the 400-Foot Gravel aquifers. One triple injection well injects into the Gaspar, 200-foot Sand, and 400-foot Gravel aquifers. The total span of injection well alignment is approximately 6.2 miles.

LA County DPW has recently installed 33 new wells during Phase II of their expansion (16 locations with 2 wells each, one location with only one well). The piping connections are still being installed on and the wells are expected to be operational sometime in 2004.
23. The Dischargers propose that for the first 5 years of operation of the recycling project, water for injection will be introduced in two distribution headers - imported diluent water at the northern end of the Barrier to provide 100 percent diluent water to the wells along the north/south alignment, and the transmission line bringing the recycled water from TITP will connect to the Barrier's distribution header near the midpoint of the well alignment to provide 100 percent recycled water to the wells along the east/west alignment. Blending is projected to occur in the aquifers. Thus, the HWRP Barrier Project shall be operated during the first 5 years in such a manner that recycled water shall constitute only up to 50 percent of the total injected water (diluent and recycled water) into the Barrier based on an annual basis. Thereafter, prior to injection, a blend of 50 percent recycled water and 50 percent diluent water will be supplied to the Barrier so that the amount of recycled water injected into an aquifer at any injection well will not exceed 50 percent based on a 5 year running average, determined annually.
24. The closest active domestic water well to the Barrier is located approximately 9,000 feet owned by the California Water Service Company (CWS Well # 75A). The well is perforated in the 200-Foot Sand, 400-Foot Gravel and Silverado aquifers.

25. The Dischargers' consultant, Camp, Dresser & McKee (CDM), developed a three-dimensional computer model of the Dominguez Gap area to track the movement of saline water, to predict future water quality conditions, and predict recycled water percentages at the nearest domestic supply well. Simulation results using the computer model (*Modeling of Additional Alternative Recycled Water Injection Scenario*, CDM Technical Memorandum dated November 17, 1998), based on the injection configuration described in Finding 21 for the first 5 years of operation, indicate the following:
- A. The travel time of the recycled water through the groundwater aquifers to CWS Well # 75A is estimated to be 20 years from start of injection;
 - B. At CWS Well # 75A, the percentage of recycled water in the 200-Foot Sand aquifer is estimated to peak close to 50 percent after 40 years and decrease to 40 percent after 100 years of injection; and,
 - C. The highest average percentage of recycled water that would be extracted from the CWS Well # 75A from all aquifers is estimated to be 11 percent after 40 years of injection.

GROUNDWATER MONITORING

26. The Water Replenishment District has conducted a groundwater monitoring program between April 1998 to February 1999 to establish a baseline groundwater quality database along the injection Barrier, and for adjacent groundwater production wells (*Baseline Groundwater Quality Monitoring Report – Dominguez Gap Barrier Recycled Water Project*, April 2001). Findings show that water quality in monitoring wells located between the Barrier and production wells vary considerably between aquifers. Many constituents exceed primary and secondary maximum contaminant levels. Injection water is projected to decrease the levels of these constituents.
27. On August 9, 2002, the Water Replenishment District submitted its proposed groundwater and tracer monitoring programs to the Regional Board and the Department of Health Services (DHS). These agencies are in the process of reviewing these programs. The District proposes the use of intrinsic cation/anion concentration differences between imported water, recycled water, and surrounding groundwater at the Dominguez Gap Barrier that are supposed to provide clear identification of recycled water transport paths and determination of percentage of recycled water in the aquifers. Once the programs are approved, the Dischargers will implement these programs.

RECYCLED WATER QUALITY FOR GROUNDWATER INJECTION

28. LADWP conducted a pilot plant study between July 1995 to March 1996 that simulated the proposed microfiltration and reverse osmosis treatment process. The water quality collected during the pilot plant study was compared to the DHS drinking water maximum contamination levels (MCLs), public health goals (PHGs), and action levels (ALs). The water quality met the MCLs, PHGs, and ALs, except for methyl tertiary butyl ether (MTBE).

MCLs are health protective drinking water standards adopted by DHS that are to be met by public water systems. MCLs take into account not only the chemicals' health risks but also

factors such as their detectability and treatability, as well as the costs of treatment. **PHGs** are levels of contaminants in drinking water that pose no significant health risks if water is consumed for a lifetime and are based on risk assessments. They are established by Cal/EPA's Office of Environmental Health Hazard Assessment, pursuant to Health and Safety Code §116365(c), for contaminants with MCLs or for contaminants for which DHS plans to promulgate MCLs. Health and Safety Code §116365(a) requires DHS to establish contaminants MCLs at levels as close as is technically and economically feasible to the contaminants' PHGs. **ALs** are health-based advisory levels established by DHS for contaminants in drinking water with no MCLs. They are levels that are considered not to pose significant health risks to people ingesting that water on a daily basis. ALs are advisory levels and not enforceable standards. Chemicals for which ALs are established may eventually be regulated by an MCL, depending on the extent of contamination, the levels observed, and the risk to human health.

However, if a contaminant is present over its AL, the water resource is considered to be contaminated and therefore degraded. Hence, in this Order the recycled water is required not to contain trace or toxic contaminants exceeding the ALs.

29. Additional MTBE analysis was performed on TITP's tertiary effluent along with analysis for tert butyl alcohol (TBA), ethyl tert butyl ether (ETBE), tert amyl methyl ether (TAME), and perchlorate. The TBA, ETBE, TAME and perchlorate data met the DHS's ALs. The City of Los Angeles believes that with LAD Public Works' effort to mitigate the MTBE concentrations in TITP's influent along with the reverse osmosis MTBE rejection rate of 98.9 percent, the recycled water will meet the DHS's MTBE MCLs.
30. On March 2002, LADWP operated the AWTF to obtain reverse osmosis product water samples for characterization purposes. On March 20, 2002, LADWP collected grab samples for analyses of constituents specified in CCR, Title 22, Chapter 15 (Title 22 Constituents). LADWP also collected samples for analyses of TOC, NDMA, dioxane, and boron. The results show that the product water for injection meets MCLs, ALs, and PHGs' Title 22 constituents. (Radium-226 plus Radium-228 and Strontium-90 were not tested in this collection). The results also indicate that the TOC and boron concentrations are higher than the limits contained in this Order. The boron limit (1.5 mg/L) is based on *Table 3-10 Water Quality Objectives for Selected Constituents in Regional Ground Waters* of the Basin Plan. The above chemicals may come from industrial wastewater. The Dischargers must therefore adjust the plant operation of the AWTF and/or improve the City of Los Angeles pretreatment or other source control programs to meet all the requirements of this Order. Otherwise, the Dischargers will not be able to inject the recycled water until the boron concentrations have been reduced.
31. The Monitoring and Reporting Program (MRP) that is part of this Order requires the Dischargers to monitor for all constituents of drinking water specified in Chapter 15, Title 22, California Code of Regulations, both regulated and unregulated. For contaminants in concentrations above the MCLs or PHGs, or for contaminants that do not have MCLs but are in concentrations above the ALs, the Dischargers are required to investigate the cause and implement remedial or corrective actions.
32. To address concerns regarding emerging chemicals including endocrine disruptors and pharmaceutically-active chemicals, the MRP also requires the Dischargers to conduct

quarterly priority pollutants screening and tentatively identified chemical analysis (TIC). After the first year of operation/injection, the monitoring frequency can be reduced from quarterly to annually. A TIC is a special analytical procedure to identify and quantify detected compounds that are not on the target list for the specific method being analyzed. Detected peaks that correspond to a compound on the target list will be identified and quantified. Unidentified peaks will be compared with the mass spectrometer reference library containing approximately 75,000 compounds to identify the compound. The DHS has specified some endocrine disrupting chemicals, pharmaceuticals and other chemicals for monitoring (see MRP).

APPLICABLE PLANS, POLICIES AND REGULATIONS

33. **Basin Plan** - The Regional Board adopted a revised *Water Quality Control Plan for the Los Angeles Region: Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) on June 13, 1994, and amended on January 27, 1997, by Regional Board Resolution No. 97-02. This updated and consolidated plan represents the Board's master quality control planning document and regulations. The Basin Plan (i) designates beneficial uses for surface and groundwater, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated (existing and potential) beneficial uses and conform to the State's antidegradation policy, and (iii) includes implementation provisions, programs, and policies to protect all waters in the Region. In addition, the Basin Plan incorporates (by reference) all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. This Order implements the plans, policies, and provisions of the Board's Basin Plan.
34. **Beneficial Uses** – In the Basin Plan, the beneficial uses of the West Coast Groundwater Basin are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
35. On September 26, 1988, the Regional Board adopted Resolution No. 88-012, *Supporting Beneficial Use of Available Reclaimed Water in Lieu of Potable Water for the Same Purpose*, which encourages the beneficial use of recycled wastewater and supports water recycling projects.
36. Section 13523 of the California Water Code provides that a regional board, after consulting with and receiving recommendations from DHS, and after any necessary hearing, shall, if it determines such action to be necessary to protect the public health, safety, or welfare, prescribe water recycling requirements for water that is used, or proposed to be used, as recycled water. Groundwater recharge of freshwater aquifers with recycled water could affect the public health, safety, or welfare; therefore requirements for such use are necessary.
37. Section 13523 further provides that the recycling requirements shall include, or be in conformance with, the statewide water recycling criteria established by DHS pursuant to Water Code Section 13521. DHS adopted revised Water Recycling Criteria (Chapter 3, Division 4, Title 22, California Code of Regulations) that became effective on December 2, 2000. Applicable criteria to this recycling project are prescribed in this Order.
38. Section 60320 of the Water Recycling Criteria provides that DHS' recommendations to the Regional Water Quality Control Boards for proposed groundwater projects and for expansion

of existing projects will be made on an individual case basis where the use of recycled water involves a potential risk to public health.

39. Section 60320 further provides that DHS' recommendations will be based on relevant factors of each project, including the following: treatment provided, effluent quality and quantity, spreading area operations, soil characteristics, hydrogeology, residence time, travel time, and distance to withdrawal.
40. Section 13540 of the Water Code requires that recycled water may only be injected into an aquifer used as a source of domestic water supply if DHS finds the recharge will not degrade the quality of the receiving aquifer. To facilitate determination of whether a recharge project will not impair the receiving groundwater, DHS has developed draft Recycling Criteria for Groundwater Recharge Reuse (latest version is dated July 21,2003). Compliance with the requirements in the criteria would likely not result in degradation of the receiving groundwater.
41. The Evolution of Recycling Water Requirements
 - A. The Regional Board has consulted with DHS regarding the proposed groundwater recharge with recycled water. DHS submitted its recommendations to the Regional Board, in a letter dated May 14, 2001, to adopt waste discharge and water recycling requirements for the recharge project.
 - B. In mail dated July 25, 2003 that revises the Findings of Facts and Conditions for HWRP Barrier Project, DHS informed Regional Board staff that the water recycling requirements shall be updated and must now be based on these Findings of Facts and Conditions for HWRP Barrier Project.
42. Prior to submitting its recommendations, DHS reviewed reports and studies on the project including the Final Environmental Impact Report (dated September 1993), revised Title 22 Engineering Report (dated May 1998), Modeling Report for Assessment of Recycled Water Injection (dated March 26, 1998) and addenda to these reports. After the review, DHS conducted a public hearing on the project on March 30, 1999, in San Pedro, California. There was no testimony in opposition to the project.
43. The major DHS' recommendations and requirements in the Findings of Facts and Conditions are shown in Table 3.

Table 3 – Recycling Criteria for Groundwater Recharge Reuse	
Factors	Minimum Requirements
Maximum recycled water contribution	Water recharged of wastewater origin shall not exceed 50 percent of the total water recharged
Minimum retention time underground*	At least 12 months prior to extraction from domestic supply wells
Horizontal separation requirements*	At least 2,000 feet between point of recycled water direct injection and domestic water supply wells
Monitoring well requirements**	Monitoring wells at a location between 1 and 3 months travel time from recharge area, and at ¼ and ½ the distance between recharge area and nearest domestic water supply well (CWS Well # 75A)

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Table 3 – Recycling Criteria for Groundwater Recharge Reuse	
Factors	Minimum Requirements
Total nitrogen***	The total nitrogen concentration shall not exceed 5 mg/L in the recycled water, or 5 mg/L in the blend of recycled water and diluent water
Total organic carbon****	The total organic carbon concentration shall not exceed 0.5 mg/L divided by the maximum average recycled water contribution in the blend of recycled water and diluent water. This is a 50% project.

*The importance of the retention time and the physical setback is based on the concept that water moving through the aquifers is afforded an extra level of treatment through soil filtration; the longer the water stays underground, the more likely trace organic and inorganic chemicals would be removed through the filtration process. In addition, virus decay with time and a 12-month retention time provides a significant log reduction in the virus density in the recycled water.

**The need to monitor at the quarter and the one half distance wells may be reconsidered depending on the annual fate and transport report.

*** Total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as nitrogen.

****Total organic carbon means oxidizable organic carbon measured by an approved laboratory pursuant to subsection 64415(a) using Method 5310C, *Standard Methods for the Examination of Water and Wastewater, 20th Edition, 1998*, with a reporting level of 0.10 mg/L, and precision and accuracy within plus-and-minus 20 percent.

44. The County of Los Angeles Department of Health Services (LACDHS), the agency that issues permits for the construction of new wells, in a letter to the Water Replenishment District dated January 23, 2001, indicated that it will seek recommendations from the Water Replenishment District before approving new well construction permits. On April 6, 2001, the Water Replenishment District adopted Resolution No. 01-619 directing the District's staff to recommend against drilling of any new domestic water production well in the 200-Foot Sand Aquifer in the Buffer Zone (within 2000 feet) adjacent to the Dominguez Gap Barrier.
45. The requirements contained in this Order are in conformance with the goals and objectives of the Basin Plan and implement the requirements of the California Water Code and Water Recycling Criteria.

INTERIM REQUIREMENTS

46. Interim limits in non-NPDES WDRs are specifically authorized pursuant to Title 23 CCR §2231. The limit for boron, prescribed in this Order, is based on the Basin Plan's Water Quality Objectives, for which the dischargers will not be able to meet immediately. Therefore, an interim limit and a compliance schedule are provided in this Order.
47. **Boron** – The 1994 Basin Plan provides that to protect groundwater, the boron concentration in the groundwater water shall not exceed the objective given in Table 3-10 of the Basin Plan.

Data submitted in previous monitoring reports indicated that Boron has been detected in the effluent (recycled water), at a concentration greater than the limit of 1.5 mg/L prescribed in Table 3-10 of the Basin Plan. The Dischargers, therefore, may not be able to achieve consistent compliance with the final effluent limit for boron. The Dischargers shall conduct the following investigations to enable them to reduce the effluent concentrations of boron.

- A. Investigate whether the U.S. Borax Facility processes are contributing to the elevated Boron in the effluent;
 - B. Investigate, if necessary, the installation of pre-treatment at the U.S. Borax Facility to remove/reduce Boron from the sewer discharge; and,
 - C. Investigate, if necessary, the installation of additional treatment technology at the AWTF to bring the effluent into compliance with the final boron limit.
48. Accordingly, the Dischargers shall prepare and submit a draft workplan acceptable to the Executive Officer, prior to implementing the studies.

CEQA AND NOTIFICATION

49. The City of Los Angeles prepared and certified the following documents in compliance with the California Environmental Quality Act (Public Resources Code Section 21000, et seq.):
- A. "Final Environmental Impact Report and Addendum for Effluent Management Project at Terminal Island Treatment Plant", State Clearinghouse No. 93021016, prepared by Engineering Science for the City of Los Angeles Department of Public Works, September 1993, certified by the City Council on July 19, 1994. The project consists of upgrades to the TITP to achieve water recycling and construction of a recycled water distribution system.
 - B. "Final Mitigated Negative Declaration for Terminal Island Treatment Plant Advanced Wastewater Treatment Facility, Phase 1 (a.k.a. Harbor Water Recycling Project)" certified by the City Council on January 22, 1999. Certification was based on "Initial Study and Mitigated Negative Declaration", W.O. E2001594, prepared the City of Los Angeles Bureau of Engineering and LADWP, September 1998. The project consists of development of the AWTF, Phase 1 production of 5 mgd product recycled water, and pipeline network to distribute recycled water for direct injection to the Barrier and other consumers.
50. In addition to the CEQA documents in Finding 46, the City of Los Angeles Bureau of Engineering prepared "Final Environmental Assessment for Terminal Island Treatment Plant Advanced Wastewater Treatment Facility, Phase 1 (a.k.a. Harbor Water Recycling Project)", W.O. E2001594, August 9, 1999, for the Bureau of Reclamation, U.S. Department of the Interior. Based on this document, the Bureau of Reclamation issued "Finding of No Significant Impact", FONSI No. LC-99-1, dated September 1, 1999, for the project.
51. This issuance of water recycling requirements by a regulatory agency for the protection of the environment is exempt from the provisions of Chapter 3 [commencing with Section 21100, et seq., Division 13 (California Environmental Quality Act), Public Resources Code] in

accordance with Section 15308, Title 14, California Code of Regulations.

52. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Board. A petition must be sent to the State Water Resources Control Board, 1001 I Street, Sacramento, California, 95814, within 30 days of adoption of the Order.

The Regional Board has notified the Dischargers and interested agencies and persons of its intent to issue water recycling requirements for the proposed HWRP Barrier Project, and has provided them with an opportunity to submit their written views and recommendations.

The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge and to the requirements.

IT IS HEREBY ORDERED that the City of Los Angeles' Department of Public Works, the City of Los Angeles Department of Water and Power, the Water Replenishment District of Southern California, and the Los Angeles County Department of Public Works shall comply with the following requirements:

I. WASTEWATER TREATMENT AND SOURCE CONTROL

Any noncompliance or violation with these requirements, unless otherwise specifically provided, the Dischargers shall notify and submit a report according to Provision VI.5 of this Order.

1. Treatment of wastewater intended for groundwater recharge injection shall be as proposed in the Findings of this Order and shall consist of primary sedimentation, secondary biological treatment, tertiary treatment (coagulation, if needed, and filtration), advanced wastewater treatment (comprising of microfiltration, organic and inorganic chemical reduction through reverse osmosis), and chlorine disinfection. Replacement of equipment or major modifications to the treatment process as described in this Order and in the *Engineering Report for the Harbor Water Recycling Project* (prepared by the LADWP and Water Replenishment District, May 1998), and technical memoranda on this project shall be subject to review and approval by DHS and this Regional Board.
2. There shall be no bypassing of the treatment processes described in this Order, except for coagulation. Coagulation need not be used as part of the treatment process provided the turbidity of the secondary effluent (influent to the filters) is continuously measured, the influent turbidity does not exceed 5 Nephelometric turbidity units (NTU) for more than 15 minutes, and never exceeds 10 NTU, and that there is the capability to automatically activate chemical addition or divert the wastewater should the filter influent turbidity exceeds 5 NTU for more than 15 minutes.
3. The City of Los Angeles shall operate its pretreatment and other source control programs for the Terminal Island Treatment Plant in such a manner as to minimize the likelihood of contamination of the wastewater with toxic chemicals that will be passed through the treatment system.

II. ADVANCED WASTEWATER TREATMENT FACILITY (AWTF) INFLUENT SPECIFICATION

For purposes of this Order, the AWTF includes microfiltration, reverse osmosis, lime stabilization, and chlorination. The influent to the AWTF shall be tertiary treated effluent that meets the following characteristics:

The influent shall, at all times, be adequately oxidized. The influent shall be considered adequately oxidized when it meets the following characteristics:

1. The monthly average Biochemical Oxygen Demand value (BOD₅ 20⁰C) does not exceed 15 mg/L. Compliance shall be determined monthly using the average of the analytical results of all 24-hour composite samples taken at least weekly during the month.
2. The monthly average Total Suspended Solids (TSS) concentration does not exceed 15 mg/L. Compliance shall be determined monthly using the average of the analytical results of all 24-hour composite samples taken daily during the month.

III. RECYCLED WATER SPECIFICATION

1. Recycled water is wastewater that has received primary, secondary and tertiary treatment followed by microfiltration, reverse osmosis, lime stabilization, and chlorine disinfection.
2. Turbidity - The turbidity of the reverse osmosis product water prior to disinfection shall not exceed 0.2 NTU more than 5 percent of the time within a 24-hour period and 0.5 NTU at any time. The turbidity shall be continuously measured with at least one reading every 1.2 hours and recorded. The results of the daily average turbidity determinations shall be reported quarterly to DHS and the Regional Board. Compliance with the daily average turbidity shall be determined based on using the recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. 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. When the turbidity requirements are exceeded, delivery of recycled water shall be suspended until such time the cause of the exceedance has been identified and corrected. Any failure to meet the turbidity performance requirements shall be reported to the DHS and the Regional Board in the next monthly report.
3. Total Organic Carbon
 - A. The total organic carbon (TOC) of the recycled water shall not exceed 0.5 mg/L divided by the maximum average recycled water contribution in the recharge water of blended recycled and diluent water injected into the aquifers.
 - B. Compliance with this requirement shall be determined as the most recent 20-sample running average of at least weekly grab sampling calculated monthly. For this new recharge project, the Dischargers shall determine compliance as soon as 4 samples have been collected. In the event of a violation of the TOC requirement, the Dischargers shall suspend recharge until the requirement is met. Within 7 days of the suspension, the Dischargers shall notify DHS and this

Regional Board.

If the average of the last four samples exceeds the TOC limit, the Dischargers shall submit a report within 60 days to DHS and this Regional Board describing the cause(s) of the exceedance and the corrective actions implemented and/or to be implemented to avoid future exceedances.

4. Total Nitrogen

- A. The total nitrogen concentration shall not exceed 5 mg/L in the recycled water, or 5 mg/L in the blend of recycled water and diluent water injected into the aquifers (During the first 5 years of operation the 100% of recycled water is injected into aquifers through the midpoint of the well alignment. Therefore, the allowable total nitrogen concentration, which shall be 5 mg/L).
- B. The weekly average of total nitrogen concentration in the recycled water or the blend, if blended before injection, shall not exceed 5 mg/L as nitrogen, based on results of analysis of 2 grab or 24-hour composite samples per week, obtained at least 3 days apart. The Dischargers shall require the laboratory conducting the analysis to notify the Dischargers within 24 hours of completing the analysis of a sample that contains total nitrogen at levels higher than the limits specified in this Order. In case of exceedance of the limit for the total nitrogen, the Dischargers shall collect a confirmation sample as soon as possible but no later than 48 hours after receipt of the results. If the average of the initial and confirmation samples still exceeds the limit, the Dischargers shall:
 - a. Investigate the cause and implement corrective measures;
 - b. Within 48 hours of receiving the confirmation sample result, notify DHS and the Regional Board and submit a report according to Provision VI.5 of this Order; and,
 - c. Suspend injection of the recycled water until appropriate corrections are made, if the average of all samples collected over the ensuing two-week period exceeds 5 mg/L.

5. Recycled water shall be, at all times, adequately disinfected. In the event that the recycled water exceeds any of the following, based on daily grab samples, the Dischargers shall suspend injection of recycled water until such time the cause of the failure has been identified and corrected. Any failure to meet the total coliform performance requirements shall be reported to the DHS and the Regional Board in the next monthly report.

- A. A 7-day median of 2.2 most probable number (MPN) per 100 milliliters for two consecutive days;
- B. 23 MPN per 100 milliliters in more than one sample in any 30-day period prior to injection; and,

- C. 240 MPN per 100 milliliters in any sample prior to injection.
6. Chlorine disinfection shall provide a concentration-time (CT) value of not less than 450 milligram-minutes per liter at all times with a modal contact time of at least 90 minutes. The CT is the product of total chlorine residual and modal contact time measured at the same period. The modal contact time is the amount of time that elapsed between the time that a tracer, such as salt or dye, is injected into the influent at the entrance of the chlorination chamber and the time that the highest concentration of the tracer is observed in the effluent from the chamber.
- A. For purposes of calculating and demonstrating compliance with the CT requirement, the Dischargers shall use modal contact time of 300 minutes and 150 minutes for flow rates of 2.5 mgd and 5.0 mgd, respectively.
 - B. In case that the RO operation is changed to produce recycled water at flow rates other than 2.5 and 5 mgd, tracer studies shall be conducted to develop a curve for use in estimating the contact times at various flow rates. The studies shall follow the protocol outlined in *Tracer Studies in Water Treatment Facilities: A Protocol and Case Studies* published by the American Water Works Association Research Foundation, 1996. A final report on the tracer studies shall be submitted to the DHS and the Regional Board within 30 days of completing the studies.
 - C. In case of requesting to reduce the CT value for disinfection, a reverse osmosis (RO) membrane integrity testing plan shall be submitted to DHS for approval to obtain RO viral removal credits.
7. The pH of the product water for injection or recharge water shall be, at all times, within the range of 6.5 to 8.5 pH units.
8. Concentrations of contaminants in the recycled water shall, at all times, not exceed the following DHS' MCLs and ALs (of lead and copper) for drinking water. These limits are prospective, new state and federal MCLs will be added as they are adopted. Compliance with primary MCLs shall be determined on the basis of a running quarterly average, calculated each quarter using the previous four quarters of data. Compliance with secondary MCLs shall be determined annually based on a single grab sample or the average of samples collected during the year, if more than one. In case of a violation of any of either primary or secondary MCL, the Dischargers shall notify and submit a report according to Provision VI.5 of this Order.
- A. Primary MCLs specified in the Drinking Water Quality and Monitoring Requirements, Chapter 15, Title 22, California Code of Regulations (CCR):
 - a. Inorganic chemicals in Section 64431, Table 64431-A, except for nitrogen compounds, Attachment A-1 of this Order;
 - b. Radionuclides in Section 64443, Table 4, Attachment A-2 of this Order;
 - c. Organic Chemicals in Section 64444, Tables 64444-A, Attachment A-3 of this Order.

- B. Primary MCLs for Disinfection Byproducts in Table 64533-A, Section 64533, Chapter 15.5, Title 22, CCR, Attachment A-4 of this Order.
 - C. Secondary MCLs in the Drinking Water Quality and Monitoring Requirements, Chapter 15, Title 22, CCR, Table 64449-A, Attachment A-5 of this Order.
 - D. Any new Federal or State MCL upon adoption.
 - E. ALs in the Drinking Water Quality and Monitoring Requirements, Attachment A-6 of this Order.
9. Recycled water shall not contain lead in concentrations greater than 0.015 mg/L.
 10. Recycled water shall not contain copper in concentrations greater than 1.0 mg/L (2nd MCL), which is the most stringent drinking water standard.
 11. Concentrations of mineral constituents in the recycled water injected into the Barrier shall not exceed Table 4.

Table 4 – Concentrations of Mineral Constituents in the Recycled Water Injected into the Barrier		
Constituent	Unit	Limit
Total dissolved solids	mg/L	800
Sulfate	mg/L	250
Chloride	mg/L	250
Boron	mg/L	1.5

12. Compliance with primary and secondary MCLs will be determined as described in parts A and B below. Should an exceedance of permit limits occur, the Dischargers shall investigate the cause(s) and submit a report to DHS and this Regional Board within 60 days of the exceedance describing the cause(s) and remedial and/or corrective actions implemented or to be implemented with a time schedule.
 - A. Compliance with primary MCLs referenced above for inorganic chemicals, radionuclides, organic chemicals, and disinfection byproducts and with action levels for lead and copper, shall be based on the running-quarterly average, calculated each quarter using the previous four quarters of data.
 - B. If the single sample result (or average of samples collected during the year, if more than one) exceeds a secondary maximum contaminant level.
13. Recycled water temperature shall not exceed 100°F at any time.
14. Interim Effluent Limit
 - A. The Discharger shall comply immediately with the following interim effluent limit until October 2, 2006. Thereafter, the Discharger shall comply with the final limitations specified in Section III.11. of this Order:

Constituent	Units	Monthly Average *
Boron	mg/L	6.1

* Interim effluent limit was derived statistically at 95% confidence level for monthly average interim limits (See Attachment A-7). Effluent performance data, provided by LADWP, from January 2002 through July 2003 and the *Minitab* program, which is based on lognormal base 10, were used to calculate the interim limits, because effluent values (x_i) are lognormally distributed for these data set.

- B. The Discharger shall submit quarterly progress reports (January 15, April 15, July 15 and October 15) to describe the progress of investigations and/or actions undertaken to reduce boron in the effluent, and to achieve compliance with the final limit in this Order by the above-mentioned deadline. The first progress report shall be received at the Regional Board by January 15, 2004.

IV. RECYCLED WATER CONTRIBUTION, RETENTION TIME AND HORIZONTAL SEPARATION REQUIREMENTS

1. The total volume of recycled water recharged by injection shall not exceed 5 mgd based upon a daily average.
2. The amount of recycled water injected into the Barrier shall not exceed 50 percent of the total injected water into the Barrier. Compliance shall be on a monthly running average basis over a time period up to a maximum of the preceding 60 months. Once a month, the average recycled water contribution shall be calculated during this period by dividing the total volume of recycled water injected during the preceding months by the total volume of injection during that period. If the average receiving water contribution exceeds 50 percent, the Dischargers shall notify DHS and the Regional Board within 7 days and submit a report within 60 days of knowledge of exceedance according to Provision VI.5.
3. The injection of recycled water shall not cause the percentage of recycled water in any single aquifer at any domestic well affected by HWRP to exceed 50 percent water of recycled water origin. Any recycled water that may already be present in the groundwater because of other activities, such as recycled water injection in the West Coast Basin Barrier Project, shall be accounted for as part of the total amount of recycled water in calculating the percent of recycled water in an aquifer.
4. Upon approval by the DHS and the Regional Board, the Dischargers shall implement the groundwater and tracer monitoring programs to track the movement of recycled water through the aquifer systems. After the first year of operation and annually thereafter, using the results of the groundwater and tracer monitoring programs, the Dischargers shall determine the amount of recycled water entering each individual aquifer, where recycled water is, the recycled water contribution and time of travel of recycled water.
5. Recycled water shall be retained underground for a minimum of 12 months, prior to extraction at any domestic water supply well. A numerical model, tracer, or other method shall be used to determine the recycled water contribution and time of travel to each aquifer. If a tracer is used, it shall be determined prior to start-up.

6. A minimum horizontal separation between the point where recycled water or blend of recycled water and diluent water is injected and a domestic water supply well shall be at least 2,000 feet. No new domestic drinking wells shall be allowed within a buffer zone defined by the area 2,000 feet from the Dominguez Gap Barrier designated as Area A in Figure 8. In addition, no new domestic drinking water wells shall be allowed to extract from the 200-Foot Sand (Gage) aquifer in the area between 2,000 feet from the Barrier and the nearest domestic drinking well, designated as Area B in Figure 8. The Water Replenishment District shall coordinate with the DHS against issuing permits for new domestic water production wells within Areas A & B.

V. GROUNDWATER MONITORING WELLS AND PROGRAMS

1. The Dischargers shall establish, as a minimum, 4 monitoring wells as follows:
 - A. At locations between one and three months travel time from the recharge area, and at $\frac{1}{4}$ and $\frac{1}{2}$ distances from the recharge area and the nearest downgradient domestic water production well (CWS # 75A); and
 - B. Two wells are for the north-south leg and two for the east-west leg. These wells are multi-port sampling wells that can be monitored at the 200-Foot Sand, the 400-Foot Gravel, and the Silverado aquifers.
 - C. New wells will need to be installed, or existing wells if determined suitable at a location between one and three months travel time from the recharge area. The number and location shall be approved by DHS and Regional Board.
 - D. The wells shall be installed such that samples can be obtained independently from each aquifer potentially conveying the recharge water. Monitoring well locations shall be determined based on a numerical model, tracer, or other method to determine the estimated underground travel time from the recharge operation to the monitoring well sites.
 - E. Construction of the wells shall be such that samples can be obtained independently from each aquifer conveying the recharge water.
2. The groundwater monitoring program shall be reviewed and modified every two years or sooner, based on results of the monitoring program. Changes to the monitoring program, including monitoring well locations, shall be approved by the Regional Board and the DHS.

VI. PROVISIONS

1. The Dischargers shall delineate the responsible party or parties to comply with the specific requirements in this Order including the Monitoring and Reporting Program (see MRP). This information shall be provided, in writing and signed by the four Dischargers, to the Regional Board Executive Officer within 45 days of the effective date of this Order. This delineation will facilitate effective communication between the Dischargers and the Regional Board. However, the Dischargers are individually and collectively responsible for compliance with this Order.

2. Any injection or discharge of recycled water, or a blend of recycled water and diluent water, at any point(s) other than the 61 wells in the Dominguez Gap Barrier and except as provided for in Provision VI.8 of this Order, is prohibited and constitutes a violation of this Order.
3. The recharge of recycled water into the Dominguez Gap Barrier shall not cause impairments of the groundwater basins and shall not constitute more than 50% by volume in the CWS Well # 75A. If at any time, the injection of recycled water is determined to be adversely impacting the receiving groundwater, or constitutes more than 50% by volume in the CWS Well # 75A, the injection of the recycled water shall be suspended immediately but not later than 24 hours of knowledge of the adverse impact. The Dischargers shall notify DHS and the Regional Board according to Provision VI.5.
4. The Dischargers shall review the Title 22 drinking water quality data for the domestic water wells nearest to the Dominguez Gap Barrier. If it is determined that a well is no longer usable as a safe, wholesome, and potable source of drinking water as a result of the recharge project, the Dischargers shall immediately notify the owner of the well to discontinue using the well and within 24 hours provide an alternate drinking water supply of safe quality. The Dischargers shall also notify as soon as possible DHS and the Regional Board according to Provision VI.5.
5. For any violation of requirements in this Order, the Dischargers shall notify DHS and the Regional Board within 24 hours of knowledge of the violation either by telephone or electronic mail. This notification shall be followed by a written report within 7 days of notification, unless otherwise specified in this Order. The report shall include, but not limited to, the following information, as appropriate:
 - A. Nature and extent of the violation;
 - B. Date and time: when the violation started, when compliance was achieved; and, when injection was suspended and restored, as applicable.
 - C. Duration of violation;
 - D. Cause/s of violation;
 - E. Corrective and/or remedial actions taken and/or will be taken with time schedule for implementation; and
 - F. Impact of the violation.
6. Within 60 days of the adoption of this Order, the Dischargers shall develop an operation, maintenance, and monitoring (OMM) plans for the AWTF and submit them for approval to the Regional Board and DHS. After a year of injecting recycled water into the Barrier, the Dischargers shall update the OMM plans and submit them to DHS for approval. Significant changes to the OMM plans must be approved by DHS prior to implementation. The Dischargers shall furnish the Regional Board with a copy of the approved OMM plans within 30 days of DHS approval. The AWTF shall be operated in accordance with the approved OMM plans.

- The OMM plans shall cover critical operational parameters including, but not limited to, routine performance testing procedures for the microfiltration and reverse osmosis systems, maintenance and calibration schedules for all monitoring equipment and process alarm set points, and response procedures for all alarms in each treatment process of the AWTF, including criteria for diverting recycled water if water quality requirements are not met, start-up, peak flow emergency response and contingency plans. The implementation of the contingency plan outlined in the 1998 Engineering Report on disposal of noncompliance recycled water, disposal of in-plant water with poor quality; power failure, and remedial action when noncompliance recycled water enters the Barrier injection system. The OMM Plan shall also include staffing levels with applicable certification levels for AWTF operations personnel.
7. The Dischargers shall provide within three years of the start of the injection project, the plans to construct facilities to provide a 50/50 percent blend of diluent water and recycled water prior to injection.
 8. For any material change or proposed change in character, location or volume of recycled water, or its uses, the Dischargers shall submit at least 120 days prior to the proposed change an engineering report or addendum to the existing engineering report to the Regional Board and DHS [pursuant to California Water Code, Section 13522.5 and CCR, Title 22, Section 60320.080] for approval. The Engineering Report shall be prepared by a qualified engineer and geologist, both registered or certified in the State of California. However, replacement or addition of injection wells to the Barrier will not require a report of material change, or filing of a new Report of Waste Discharge, provided:
 - A. the additional injection capacity does not violate any requirement in this Order;
 - B. at least 30 days prior to installation, the Dischargers submit in writing the purpose and location of the wells to DHS and the Regional Board; and,
 - C. within 90 days after the installation of the wells, the Dischargers submit in writing the complete geologic and electrical logs and as-built construction diagrams of the injection wells to DHS and the Regional Board.
 9. The Water Replenishment District shall perform annually a mass balance to insure that blending is occurring in the aquifer for the first five years. Barrier water flow paths will be determined annually from groundwater elevation contours, and compared to the flow and transport model will be updated to match actual flow patterns observed within the aquifer if the flow paths have significantly changed.
 10. This Order includes "Standard Provisions Applicable to Waste Discharge Requirements" (Standard Provisions - Attachment W). In the event of conflict between provisions stated herein and the Standard Provisions, the provisions stated herein prevail.
 11. This Order includes Monitoring and Reporting Program No. CI-8654 (MRP). In the event of conflict between provisions stated in the MRP and the Standard Provisions, the provisions in the former prevail.

12. The Dischargers shall provide an annual report described in the MRP to this Regional Board, DHS, and all downgradient public drinking water systems.
13. The Dischargers shall, for the purposes of protecting public health, ensure that its equipment and facilities for treatment and recharge operate at level of peak performance in order to limit the presence of contaminants in the recycled water including regulated contaminants identified in Attachment A-8.
14. The Dischargers shall provide the Engineering Report including an operation plan that will be used to ensure that equipment and facilities for treatment and recharge operate at peak performance levels.
15. Every five years, the Dischargers shall update the engineering report and submit it to this Regional Board and DHS for approval.
16. The requirements in this Order do not exempt the Dischargers from complying with any other laws, regulation, or ordinances, which may be applicable. This Order does not legalize the TITP, the AWTF, or the Barrier, and it leave unaffected any further constraint on the use of recycled water that may be contained in other statutes or required by other agencies.
17. This Order does not alleviate the responsibility of the Dischargers to obtain other necessary local, State, and Federal permits to construct facilities necessary for to comply with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.

VII. GENERAL REQUIREMENTS

1. A copy of this Order shall be maintained at the TITP, the AWTF, and the Dominguez Gap Barrier offices so that this Order is available at all times to operating personnel.
2. The Dischargers shall, at all times, properly operate and maintain all treatment facilities and control systems, transmission and injection facilities and related appurtenances, which were constructed and installed or used by the Dischargers to achieve compliance with the requirements of this Order. Proper operation and maintenance includes: effective performance testing, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance and control procedures.
3. A Wastewater Treatment Plant Operator, or a Water Treatment Plant Operator, with at least Grade V certificate shall inspect the AWTF at the TITP on a regular basis to ensure that all unit treatment processes are working properly and that the recycled water from the TITP is in compliance with this Order.
4. Supervisors and operators of the TITP shall possess a certificate of appropriate grade as specified in California Code of Regulations, Title 23, Section 3680 or subsequent revisions.

5. The Dischargers shall provide a comprehensive industrial pretreatment and pollutant source control program for the control of discharge of toxic wastes from point sources, which is approved by this Regional Board. If DHS identifies any contaminants that may pose a risk of contamination to a drinking water supply, it may designate those contaminants for inclusion in the pretreatment and source control program requirements for the TITP to minimize the possibility that influent wastewater to TITP which is source water to the recharge system may be contaminated with such toxic chemicals. The program shall include:
 - A. An assessment of the fate of the specified contaminant compounds through the wastewater and recycled water treatment systems.
 - B. A source investigation and monitoring program focused on the specified contaminants and their potential ability to persist through the treatment systems.
 - C. A comprehensive outreach program to industrial, commercial and residential communities within the sewage collection agency's service area to manage and minimize the discharge of compounds of concern at the source.
 - D. A proactive program for maintaining an inventory of compounds discharged into the wastewater collection system so that new compounds of concern can be evaluated rapidly.
6. The Dischargers shall provide standby or emergency power facilities and/or sufficient storage or diversion capacity or other means such that in the event of power outages or plant upset or other causes, the discharge or injection of raw or inadequately treated wastewater does not occur.
7. The Dischargers through a comprehensive monitoring program (see MRP) should continue to assure that the recycled water produced at the AWTF for injection into the groundwater in the Barrier is not contaminated with toxic chemicals of industrial origin.
8. Adequate facilities shall be provided to protect the TITP, AWTF, and Dominguez Gap Barrier injection system from damage by storm flows and runoff.
9. Neither the wastewater treatment nor injection of recycled water shall cause a condition of pollution or nuisance as defined in Section 13050 of the California Water Code.
10. Odors of sewage origin shall not be perceivable beyond the limits of the TITP premises.
11. The injection of recycled water shall not result in earth movement in geologically unstable areas.
12. Injection of recycled water shall not impart tastes, odors, color, foaming, or other objectionable characteristics to receiving groundwater.
13. Injection of recycled water shall not cause a violation of any applicable water quality standard for receiving groundwater adopted by this Regional Board or the State Water Resources Control Board.

14. In the event of any change in name, ownership, or control of the TITP, AWTF, and the Barrier injection facilities, the Dischargers shall notify DHS and this Regional Board of such change and shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be forwarded to the Regional Board at least 30 days prior to the change.
15. The Dischargers shall maintain all records required under this Order that includes the MRP for at least 5 years.
16. After notice and opportunity for a hearing, this Order may be modified, revoked, reissued, or terminated for cause, which include, but is not limited to:
 - A. Failure to comply with any condition of this Order;
 - B. Endangerment of human health or the environment resulting from the permitted activities in this Order;
 - C. Obtaining this Order by misrepresentation, or failure to disclose all relevant facts;
 - D. Acquisition of new information, which could have justified the application of different conditions if known at the time of Order adoption;
 - E. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.
17. The Dischargers shall furnish, within a reasonable time, any information the Regional Board or the DHS may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Dischargers shall also furnish to the Regional Board or the DHS, upon request, copies of any records required to be kept under this Order.
18. Filing of a request for modification, revocation, reissuance, or termination of the Order, or a notification of planned changes or anticipated noncompliance, does not stay any condition of this Order.
19. Water Replenishment District shall notify the appropriate governmental entity for them to adopt an ordinance, resolution, regulation, that prevents the use of groundwater for drinking water within the area required to achieve 12 months retention time and the 2,000 feet of horizontal separation, Area A in Figure 8 and also the area between 2,000 feet from the Barrier and the nearest existing domestic well from the Barrier in the 200-Foot Sand (Gage) aquifer, Area B in Figure 8. The ordinance, resolution, regulation, shall be invoked prior to the start of injection of recycled water.
20. DHS's July 25, 2003, Revised Findings of Fact and Conditions (Attachment A-9) are incorporated herein and made part of this Order.

VIII. EFFECTIVE DATE OF THE ORDER

This Order takes effect upon its adoption.

I, Dennis A. Dickerson, 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, Los Angeles Region on October 2, 2003.

Dennis A. Dickerson
Executive Officer

/DTSAI/