

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

320 West 4th Street, Suite 200, Los Angeles, California, 90013
(213) 576-6600 • Fax (213) 576-6793
<http://www.waterboards.ca.gov/losangeles>

**ORDER NO. R4-2016-XXXX
(File No. 97-208)**

**WASTE DISCHARGE REQUIREMENTS
AND
WATER RECYCLING REQUIREMENTS**

ISSUED TO

**CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
TERMINAL ISLAND WATER RECLAMATION PLANT
HARBOR WATER RECYCLING PROJECT - DOMINGUEZ GAP BARRIER PROJECT**

The following Project Sponsors are subject to Waste Discharge Requirements (WDRs) and Water Recycling Requirements (WRRs) set forth in this Order:

Table 1. PROJECT SPONSORS INFORMATION

Project Sponsors Producer Distributor Owner/Operator	City of Los Angeles, Bureau of Sanitation (LASAN)
	City of Los Angeles, Department of Water and Power (LADWP)
	Los Angeles County Department of Public Works (LACDPW)
Name of Facility	Advanced Water Purification Facility (AWPF or Facility) located at the Terminal Island Water Reclamation Plant (TIWRP)
Facility Address	445 Ferry Street
	San Pedro, CA 90731
	Los Angeles County

Table 2. ADMINISTRATIVE INFORMATION

This Order was adopted and shall become effective on:	October 13, 2016
---	------------------

I, Samuel Unger, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of the Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on the date indicated above.

Samuel Unger, P.E., Executive Officer

CONTENTS

I. BACKGROUND	4
II. PURPOSE OF ORDER	6
III. HARBOR WATER RECYCLING PROJECT (HWRP)	7
IV. DOMINGUEZ GAP BARRIER PROJECT	8
V. RECYCLED WATER PRODUCTION	9
VI. GROUNDWATER STUDIES	10
VII. REGULATION OF RECYCLED WATER	12
VIII. OTHER APPLICABLE PLANS, POLICIES, AND REGULATIONS	13
IX. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) AND NOTIFICATION	16
X. INFLUENT SPECIFICATIONS	17
XI. RECYCLED WATER TREATMENT SPECIFICATIONS	17
XII. RECYCLED WATER DISCHARGE LIMITS	17
XIII. GENERAL REQUIREMENTS	18
XIV. DDW SPECIFICATIONS	20
XV. ADDITIONAL PROVISIONS	21
XVI. REOPENER	23
XVII. ENFORCEMENT	23
XVIII. EFFECTIVE DATE OF THE ORDER	24

TABLES

TABLE 1. PROJECT SPONSORS INFORMATION	1
TABLE 2. ADMINISTRATIVE INFORMATION	1
TABLE 3. PROPOSED RECYCLED WATER PRODUCTION CAPACITY	7
TABLE 4. RESULTS OF TRACER STUDIES	10
TABLE 5. GROUNDWATER BENEFICIAL USES - LOS ANGELES COASTAL PLAIN	13
TABLE 6. WATER QUALITY OBJECTIVES FOR GROUNDWATER	14
TABLE 7. AWPf RECYCLED WATER DISCHARGE LIMITATIONS	17

FIGURES

FIGURE 1 - TERMINAL ISLAND WRP RECYCLED WATER DISTRIBUTION SYSTEM	25
FIGURE 2 - DOMINGUEZ GAP INJECTION WELL ALIGNMENT	26
FIGURE 3 - DOMINGUEZ GAP GROUNDWATER AQUIFERS	27
FIGURE 4 – PROCESS FLOW DIAGRAM OF THE EXISTING FACILITY	28
FIGURE 5 – PROCESS FLOW DIAGRAM OF THE EXPANDED FACILITY	29
FIGURE 6 – SIMULATED RECYCLED WATER FRACTION GAGE AQUIFER	30
FIGURE 7 – SIMULATED RECYCLED WATER FRACTION LYNWOOD AQUIFER	31

ATTACHMENTS

MONITORING AND REPORTING PROGRAM (CI-8654).....MRP-1

ATTACHMENT A - STANDARD PROVISIONS.....A-1

ATTACHMENT B – DIVISION OF DRINKING WATER RECOMENDATION LETTER.....B-1

REVISED TENTATIVE

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

I. BACKGROUND

1. The City of Los Angeles, Bureau of Sanitation (LASAN), in the Department of Public Works, owns and operates the Terminal Island Water Reclamation Plant (TIWRP) with its associated Advanced Water Purification Facility (AWPF) located on Terminal Island approximately 20 miles south of downtown Los Angeles. TIWRP currently treats an average wastewater flow of 14.5 million gallons per day (MGD) with an average dry weather design capacity of 30 MGD. Wastewater is received from industrial, commercial, and residential sources within Terminal Island, San Pedro, Wilmington, and portions of Harbor City. Approximately 60% of the wastewater originates from industrial and commercial sources, and the remaining 40% originates from residential sources. Historically, the TIWRP influent has had a high salt content due to seawater intrusion in portions of the groundwater basin in the service area. The TIWRP effluent is either treated at the on-site AWPF for beneficial reuse or it is discharged to the Los Angeles Outer Harbor. Discharge to the Los Angeles Outer Harbor is currently regulated under the Los Angeles Regional Water Quality Control Board (RWQCB) Order No. R4-2015-0119, issued on June 11, 2015, and subsequently amended by Order No. R4-2015-0119-A01 on October 08, 2015.
2. The TIWRP is also subject to the State Water Resources Control Board's (State Water 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 Water Board ordered LASAN to phase out the TIWRP discharge at the earliest practicable date or demonstrate that the discharge enhances the quality of the receiving water. LASAN opted for the latter approach but was not successful in demonstrating that the TIWRP effluent enhances the water quality in the harbor. Therefore in 1977, this Regional Water Board issued Order No. 85-77 requiring LASAN to cease the TIWRP discharge to the harbor at the earliest practicable date.
3. On October 31, 1994, The Regional Water Board adopted Resolution 94-009, which approved the implementation of water recycling as a means to phase out the TIWRP discharge to the Los Angeles Harbor with the exception of brine. Since the adoption of Resolution 94-009, LASAN has developed the Harbor Water Recycling Project (HWRP) which includes producing and reusing recycled water from the AWPF. The HWRP has two parts which includes nonpotable reuse projects (eg. recycled water for irrigation, dust control, industrial use, and recreational impoundments) throughout the Los Angeles Harbor area and injection of recycled water into the Dominguez Gap Seawater Intrusion Barrier (Barrier). Non-potable reuse is currently regulated under Order No. R4-2003-0025. [The Dominguez Gap Barrier Project \(DGBP\) is currently regulated under Order No. R4-2003-0134, and subsequently amended by Order No. R4-2010-0183, R4-2011-0034, and R4-2003-0134-A03.](#) The [Harbor Water Recycling—Dominguez Gap Barrier Project \(HWRP-DGBP\)](#) is a multi-agency project that reduces the city's reliance on imported water by injecting recycled water from the AWPF into the Barrier. The agencies involved in the operation of the Project are as follows and will be collectively referred to as the Project Sponsors:
 - A. LASAN served as the lead agency under CEQA for the TIWRP and AWPF expansions, owns and operates the TIWRP and the AWPF, owns the rights to the recycled water produced at these facilities, and administers the source control

- program for industrial and commercial entities that discharge to the TIWRP. LASAN is also responsible for the operation and maintenance of the TIWRP and AWPf, for the overall quality of the recycled water leaving the TIWRP and the AWPf, and for conducting all monitoring and reporting of the influent, effluent, diluent water, and blended water, required under this Order.
- B. The City of Los Angeles, Department of Water and Power (LADWP) is the purveyor of the recycled water delivered to the DGBP. LADWP is responsible for selling the recycled water and for ensuring the recycled water is distributed to the project site.
- C. The Los Angeles County Department of Public Works (LACDPW) owns, operates, and maintains the DGBP wells and infrastructure. LACDPW is responsible for ensuring that the wells and infrastructure are properly operated and maintained so that the recycled water is distributed to the DGBP as described in this Order. LACDPW is also responsible for controlling the flow to each of the wells.
4. Although not a Project Sponsor with respect to this Order, the Water Replenishment District of Southern California (WRD) protects the groundwater resources of the Central and West Coast Groundwater Basins through management activities including artificial replenishment, groundwater monitoring, deterrence of seawater intrusion, and groundwater quality activities. WRD is also the administrative branch of the Watermaster for the two basins. WRD purchases all of the water used for injection into the DGBP, including potable water from the West Basin Municipal Water District and recycled water from LADWP. The LACDPW injects the water purchased by WRD into the DGBP using LACDPW's infrastructure and injection wells. Prior to the operation of the AWPf, WRD only purchased potable water from the West Basin Municipal Water District for the DGBP but has been working with LASAN and LADWP towards injecting 100% recycled water into the Barrier. WRD has historically performed the groundwater activities required by the permit, including the sampling, analysis, modeling, tracer studies, and reporting, and presents the results to LASAN (quarterly and annual summary reports) for their submittal to the Regional Water Board, or directly to the Regional Water Board in the case of the annual engineering report.
5. In a September 22, 2014, letter to LASAN; LADWP; and LACDPW; with a copy to the Regional Water Board, WRD requested to no longer be listed as a Project Sponsor in the DGBP WDR/WRR. In response to the request, WRD has been removed as a Project Sponsor because even though WRD purchases the recycled water and knows or should know that the discharge of recycled water into the Dominguez Gap is or has occurred, WRD does not have the legal ability to control the discharge. WRD does, however, own and operate ten of the groundwater monitoring wells at locations Wilmington 1 and Wilmington 2 that are included in the WDR/WRR groundwater monitoring requirements. The remaining six wells at locations 23T7, 26JN, and 27YC, listed in the groundwater monitoring section of the WDR/WRR are owned and operated by LACDPW. Independent of the WDR/WRR permit requirements, WRD will continue to monitor their ten wells to support their Regional Groundwater Monitoring Program. WRD has also expressed a commitment to the Project Sponsors to facilitate the implementation of the groundwater monitoring permit requirements. [LASAN and WRD are working together to negotiate a new 3rd party agreement where WRD would continue to conduct these groundwater monitoring activities and the agreement is expected to be in place by December 2017. The Regional Water Board understands](#)

that LASAN and WRD will enter into a new agreement if LASAN continues to require WRD's groundwater monitoring services.

6. On October 02, 2003, the Regional Water Board adopted Order No. R4-2003-0134 for the injection of recycled water into the Barrier. This Order restricted the permitted total volume of recycled water to 5 MGD and to 50 percent of the total water injected into the Barrier. The remaining 50 percent of water injected into the Barrier (diluent water) is potable water purchased from the West Basin Municipal Water District.
7. On June 07, 2010, the Regional Water Board issued a letter amending the groundwater monitoring requirements to reduce the monitoring frequency of most constituents including several exceptions.
8. On October 07, 2010, the Regional Water Board adopted Order No. R4-2010-0183, amending the groundwater monitoring program and deleting the tracer monitoring program contained in Order No. R4-2003-0134.
9. On February 03, 2011, the Regional Water Board adopted Order No. R4-2011-0034, further amending Order No. R4-2003-0134. This amendment removed section VI.7. from the Order to postpone the construction of a blending station under certain conditions proposed by the California Department of Public Health, whose functions with respect to recycled water have been transferred to the State Water Resources Control Board, Division of Drinking Water (DDW).
10. In 2012, LASAN installed two additional microfiltration (MF) skids and replaced old membranes in the ten existing microfiltration skids. In addition, all of the reverse osmosis (RO) membranes were replaced with new membranes that have a larger filter surface area. These modifications allow the AWPf to produce 20% more recycled water than the previous system, an increase in production capacity from 5.0 to 6.0 MGD. The chlorine contact tank was originally built in 2002 to handle up to 6.0 MGD, but the initial tracer study conducted in 2002 only considered a flow rate of 2.5 and 5.0 MGD. In order to demonstrate the actual detention time for 6.0 MGD, tracer tests were conducted in 2014 on 5.0 and 6.0 MGD. The final report titled *Terminal Island Water Reclamation Plant Advanced Water Purification Facility Chlorine Contact Tank Tracer Test* (2014 Tracer Study) was submitted to DDW along with the request for approval to increase recycled water production. DDW approved the 2014 Tracer Study on May 11, 2015, and the Regional Water Board amended the WRRs to permit the increase in recycled water production from 5.0 to 6.0 MGD, on October 08, 2015.
11. Final regulations for groundwater replenishment projects using recycled water in Title 22, § 60320 of the California Code of Regulations (22 CCR) became effective on June 18, 2014.

II. PURPOSE OF ORDER

12. The treatment and use of recycled water at the AWPf for injection into the Barrier was previously regulated under Order R4-2003-0134, issued by this Regional Water Board on October 2, 2003, as amended by R4-2010-0134, R4-2011-0034, and R4-2003-0134-A03 issued by this Regional Water Board on October 7, 2010, February 3, 2011, and October 08, 2015, respectively.
13. LASAN plans to double the capacity of the AWPf and to upgrade the disinfection process to an Advanced Oxidation Process (AOP). These improvements will increase the treatment capacity of the AWPf from 6 MGD to 12 MGD and will upgrade the treatment process to comply with the new groundwater replenishment regulations

adopted in June 2014. In addition, recycled water from the AWPf will be distributed to Machado Lake to improve and rehabilitate the long-term health of the lake, the San Pedro area for irrigation, the Harbor Generating Station, and to other industrial users. The project completion date is expected to be February of 2017. See Figure 1 for the existing and proposed distribution system.

14. This Order has been developed to establish the requirements for the treatment process of the upgraded AWPf, to increase the maximum Recycled Water Contribution (RWC) permitted to be injected into the Barrier from 50% to 100%, and to include findings, recycled water limitations, prohibitions, and monitoring and reporting program for the upgraded AWPf. In this revision, the Standard Provisions (Attachment A) have also been updated.
15. On January 14, 2014, LASAN submitted a Report of Waste Discharge requesting an amendment of the Waste Discharge Requirements and Water Recycling Requirements (WDRs/WRRs) to reflect their proposal to expand the AWPf and increase the volume of recycled water injected into the Barrier. The Regional Water Board found the Report of Waste Discharge to be complete on February 14, 2014.
16. On February 06, 2015, LASAN submitted a draft Title 22 Engineering Report for the expansion of the Facility to the Regional Water Board and to DDW. The Engineering Report was later revised in response to comments from DDW and resubmitted on July 27, 2015. LASAN, in collaboration with DDW, held a public hearing regarding the expansion of the AWPf and the DGBP. The final Engineering Report was approved by DDW on December 18, 2015, with recommendations to the Regional Water Board. DDW's recommendations were incorporated into this Order (Refer to Attachment B).

III. HARBOR WATER RECYCLING PROJECT (HWRP)

17. To implement Regional Water Board Resolution No. 94-009, LASAN has been developing the HWRP in phases with the ultimate goal of reusing 100% of the waste flow from Terminal Island, with the exception of brine. Applications of the recycled water include injection into the Barrier, irrigation, industrial use, and recreational uses. Table 3 includes the proposed quantity of recycled water to be produced for each phase.

TABLE 3. PROPOSED RECYCLED WATER PRODUCTION CAPACITY

Phase	Recycled Water (MGD)
I	5.0
II	12.0

18. Construction of Phase I of the HWRP was completed in the spring of 2002 and a full description of the treatment process is provided in section V. Phase I of the AWPf officially began operation in February 2006 and has produced up to 5 MGD of high quality advanced treated recycled water for reuse.
19. Phase II of the HWRP is scheduled for completion in 2017 and will increase the treatment capacity from 6 MGD to 12 MGD. The disinfection process will be upgraded from chlorination disinfection to an Advanced Oxidation Process (AOP) to comply with the current groundwater replenishment regulations adopted by DDW in 2014. A full description of the upgraded facility is provided in section V.26. Phase 2 will achieve full advanced treatment as defined by 22 CCR § 60320.201. The purified recycled water regulated under this Order will be distributed to the Barrier to prevent seawater intrusion. Purified recycled water will also be distributed to other users; however,

distribution to those users is regulated under separate orders. Order No. R4-2003-0025 permits the use of recycled water for irrigation of parks, golf courses, freeway landscapes, schoolyards, cemeteries, other landscape and agricultural areas, industrial uses, and recreational impoundments. LASAN also plans to deliver recycled water to Machado Lake to supplement water lost during the summer months and to improve the quality of the water within the lake; however, LASAN has not yet submitted a complete ROWD or engineering report to permit this use of recycled water. DDW has approved the injection of up to 100% RWC thereby reducing the need for potable water purchased from the West Basin Municipal Water District. After the completion of Phase II, 100% of the average flow from TIWRP will be beneficially reused, with the exception of brine.

IV. DOMINGUEZ GAP BARRIER PROJECT

20. The Dominguez Gap is part of the West Coast Groundwater Basin and is located in the southern portion of the Los Angeles River flood plain between the Dominguez and Signal Hills. 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. The Dominguez Gap and the Dominguez Gap Barrier Project injection well alignment are depicted in Figure 2.
21. There are five groundwater-bearing units defined in the vicinity of the Barrier, including from shallowest to deepest, the Gaspar Aquifer, 200-foot Sand Aquifer (Gage Aquifer), 400-foot Gravel Aquifer (Lynwood Aquifer), Upper Silverado Aquifer, and Lower Silverado Aquifer. The geological cross-section for these aquifers is illustrated in Figure 3. Water is injected into the Gage Aquifer in the East-West alignment of the Barrier, and into both the Gage and Lynwood Aquifers in the north-south alignment of the Barrier.
22. The Barrier is comprised of 94 injection wells and 257 observation wells. The injection 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. There are 41 original wells that were installed in the 1970s and 53 new wells that were installed since 2001. The 18 injection wells located along the southern east-west reach inject water only into the Gage Aquifer. Wells in the north-south alignment in the middle portion of the Barrier inject into the Gaspar, Gage, and Lynwood Aquifers. The total span of injection well alignment is approximately 6.2 miles.
23. Prior to the construction of the Barrier, decades of over-pumping caused the water levels in the West Coast Groundwater Basin to drop. This drop in the water supply has allowed seawater intrusion to occur in the potable aquifer, rendering portions of the basin unsuitable for beneficial use. The DGBP began operation in 1971 and is designed to protect the West Coast Groundwater Basin from seawater intrusion 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 6.2-mile well alignment creates a pressure ridge that prevents seawater from passing the Barrier and entering further into the groundwater basins. The injected water flows inland, providing needed replenishment water to the groundwater basins. The failure to maintain an effective seawater intrusion barrier would cause serious water quality degradation in drinking water aquifers in southeastern Los Angeles County and the potential loss of this water resource.

24. Historically, WRD has purchased potable imported water to supply the recharge operations. Recently, with advances in water treatment technology, WRD began purchasing high quality recycled water to supplement potable supplies. In 2006, the LADPW began injection of 50% recycled water from TIWRP the AWPf and 50% potable water into the Barrier.
25. The Project Sponsors plan to increase production of recycled water from the AWPf and to inject 100% recycled water into the Barrier; however, imported water may need to be injected into the Barrier occasionally, depending on the recycled water supply and AWPf maintenance.

V. RECYCLED WATER PRODUCTION

26. Terminal Island Water Reclamation Plant Tertiary Treatment

TIWRP treats municipal wastewater and the process consists of preliminary treatment (bar screening and aerated grit removal), primary treatment (primary sedimentation), secondary treatment (activated sludge biological treatment, secondary clarification, and tertiary treatment (filtration).

- A. *Preliminary Treatment* – Removes coarse solids (bar screening), sand and silt (grit removal) from wastewater.
- B. *Primary Sedimentation* – Removes solids from wastewater by gravity. The heavier solids settle and are scraped out of the primary sedimentation basin. The lighter solids float to the top and are skimmed off; however, some solids remain in suspension.
- C. *Secondary Activated Sludge Treatment System* – Consists of microorganisms that consume non-settleable and dissolved organic contaminants and forms a settleable floc.
- D. *Secondary Sedimentation* – Removes biological floc from the wastewater which mostly becomes part of the waste sludge.
- E. *Tertiary Treatment* – Filtration removes or reduces suspended or colloidal matter from the liquid stream by passing the water through a bed of graded granular material. Filters remove the solids that the secondary sedimentation process did not remove, thus improving the disinfection efficiency and reliability.

27. Advanced Water Purification Facility Treatment Process

The AWPf receives tertiary-treated municipal wastewater from TIWRP and produces advanced treated recycled water suitable for a variety of uses. The treatment train at the AWPf currently consists of microfiltration (MF), sulfuric acid addition, reverse osmosis (RO), pH stabilization, and chloramination disinfection. When construction of Phase II is complete, chloramination disinfection will be replaced with an AOP and a flow equalization basin will be added to the beginning of the AWPf treatment train. The process flow diagrams for the existing and expanded facility are provided in Figure 4 and Figure 5, respectively.

- A. *Flow Equalization*: To operate the AWPf at a constant flow rate and to maximize production of the advanced treated recycled water, a two million gallon tertiary effluent equalization basin will be located upstream of the AWPf and will become operational upon completion of the Phase II Ultimate Expansion.

- B. *MF Pretreatment Chemical Addition:* Sodium hypochlorite and aqua ammonia are added prior to the MF process to help prevent biofouling of the MF/RO membranes.
 - C. *MF:* Removes particulates and provides pretreatment ahead of the RO system to increase system reliability and to prevent RO membrane fouling. The MF units are periodically back-washed to clean the membranes and the backwash is sent back to the TIWRP's headworks for processing.
 - D. *Sulfuric Acid Addition:* Added after MF treatment to prevent precipitation of calcium carbonate within the RO system.
 - E. *RO:* Removes salts, minerals, metal ions, organic compounds, and microorganisms. The RO brine is dechlorinated and discharged with tertiary treated final effluent from TIWRP through TIWRP's existing outfall in accordance with NPDES permit No. CA0053856 and Resolution No. 94-009.
 - F. *pH Stabilization:* The pH of the RO permeate is increased using sodium hydroxide and calcium chloride, to protect the LADPW's distribution and injection system.
 - G. *Disinfection:* The final step in the treatment process prior to distribution is disinfection. The current process includes chloramination but in order to meet the Title 22 regulations for subsurface injection of recycled water, the disinfection process will be upgraded to an AOP. The AOP selected for the Phase II Ultimate Expansion includes low-pressure ultraviolet (UV) irradiation and hypochlorous acid. The AOP is used to disinfect RO permeate and destroy some constituents of emerging concern (CECs) that pass through RO membranes due to their low molecular weight and low ionic charge.
28. LASAN conducted a tracer study in 2002 to determine the minimum modal contact time in the chlorine contact tank at nominal flow rates 2.5 and 5.0 MGD. In 2014, LASAN conducted an additional tracer study to determine the minimum modal contact time in the chlorine contact tank at nominal flow rates 5.0 and 6.0 MGD. LASAN submitted a report for the 2002 and 2014 tracer studies to the Regional Water Board and DDW on October 16, 2002, and April 29, 2015, respectively. Table 4 summarizes the flows and the corresponding chlorine contact detention times from these studies.

Table 4. Results of Tracer Studies

Flow Rate (MGD)	Flow Rate (gallons per minute)	Detention Time (Minutes)	Test Date
2.5	1,736	300	06/06/02
5.0	3,472	150	07/31/02
5.0	3,472	148	05/20/14
6.0	4,167	112	05/22/14

VI. GROUNDWATER STUDIES

29. WRD 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.

30. Prior to startup of recycled water injection (February 2006) and continuing through 2010, WRD performed a rigorous intrinsic tracer test to document the movement of recycled water through the aquifers. The intrinsic tracer test used 19 observation wells at 13 locations. Prior to initiating tracer testing, DDW and the RWQCB agreed that recycled water is chemically distinct from the previously injected Metropolitan Water District (MWD) imported potable water and native groundwater. The advanced treatment process at the AWPf produces water with much lower mineral content than the MWD imported water and the groundwater; therefore, the lower mineral concentration was used as a groundwater tracer to follow recycled water movement and document retention time.
31. Calculations based on groundwater elevation contour maps, hydraulic conductivity values, and effective porosity values indicate that the recycled water travels at a rate of approximately 484 feet per year. At this current rate, the recycled water has an underground retention time of approximately 19 years to the nearest drinking water well (California Water Service Company well 275-01) and will not reach this well for another 9 years. This retention time exceeds the minimum two-month requirement in 22 CCR § 60320.224 and provides the Project Sponsors with sufficient response time to identify treatment failures and to implement actions necessary for the protection of public health. Figures 6 and 7 depict the projected recycled water contribution in the Gage and Lynwood Aquifers as of December 2015.
32. The 2003 Order required collection of monitoring data before the start of injection of recycled water into the Barrier, and an annual assessment of data collected thereafter. Recycled water is currently only injected along the western end of the Barrier and only imported potable water is injected along the eastern end of the Barrier. Therefore, any water quality changes on the western leg of the Barrier is most likely due to the recycled water quality and any water quality changes along the eastern leg of the Barrier is most likely due to the quality of the imported potable water. The water quality at the monitoring wells most likely to be impacted by recycled water has generally remained constant with few detections above the drinking water Maximum Contaminant Levels (MCLs) or DDW Notification Levels (NLs). The Gaspar aquifer is the shallowest aquifer in the basin and experiences higher salt concentrations than the other aquifers in the groundwater basin, which indicates that the groundwater is influenced by seawater intrusion. However, the total dissolved solids and chloride concentrations have been declining since recycled water injection began in 2006. The remaining aquifers have experienced fluctuations in the total dissolved solids, chloride, and hardness concentrations, which may be a result of seawater intrusion or changes in the potable water quality injected into the Barrier.
33. The quantity of recycled water injected into the Barrier before and after the Phase 2 AWPf Ultimate Expansion is expected to increase due to greater reliability in the existing treatment system and due to the construction of the expanded treatment system. Imported potable water injected in the past will be replaced (as much as possible) with recycled water. The recycled water produced by the expanded TIWRP AWPf will be of higher quality than both potable water and the current MF/RO treated recycled water, which consistently meets all applicable water quality

standards and permit limits. Consequently, a measureable trend of groundwater quality improvement is anticipated following the Phase 2 AWPf Ultimate Expansion.

VII. REGULATION OF RECYCLED WATER

34. State authority to oversee recycled water use is shared by DDW, the State Water Board, and the Regional Water Boards. DDW is the agency with the primary responsibility for establishing water recycling criteria under Title 22 of the CCR to protect the health of the public using the groundwater basins as a source of potable water. The State Water Board and Regional Water Boards are responsible for issuing waste discharge requirements and water recycling requirements for water that is used or proposed to be used as recycled water.
35. The State Water Board adopted Resolution No. 77-1, *Policy with Respect to Water Reclamation in California*, which includes principles that encourage and recommend funding for water recycling and its use in water-short areas of the state. On September 26, 1988, the Regional Water Board also adopted Resolution No. 88-012, which encourages the beneficial use of recycled wastewater and supports water recycling projects.
36. The State Water Board adopted the Recycled Water Policy (State Water Board Resolution No. 2009-0011) on February 3, 2009, and amended the Policy on January 22, 2013. The purpose of the Recycled Water Policy is to protect groundwater resources and to increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations.
37. In sections 5 and 8 of the Recycled Water Policy, three agencies are described with jurisdiction over the use of recycled water including the Regional Water Boards, the State Water Board, and DDW. The State Water Board develops general policies governing the permitting of recycled water projects and exercises general oversight of recycled water projects, including review of Regional Water Board permitting practices. DDW is charged with protection of public health and drinking water supplies and with the development of uniform water recycling criteria appropriate to particular uses of water. The Regional Water Boards shall rely on the expertise of DDW for the establishment of permit conditions needed to protect human health. The Regional Water Boards are charged with protection of surface water and groundwater resources and with the issuance of permits that implement DDW recommendations, the Recycled Water Policy, and applicable law, and will use their authority to the fullest extent possible to encourage the use of recycled water.
38. A 1996 Memorandum of Agreement (MOA) between DDW and the State Water Board on behalf of itself and the Regional Water Boards allocates the primary areas of responsibility and authority between these agencies regarding the use of recycled water. The MOA provides methods and mechanisms necessary to ensure ongoing and continuous future coordination of activities relative to the use of recycled water in California. This Order includes requirements consistent with the MOA.
39. Section 13523(a) of the California Water Code (CWC) provides that a Regional Water Board, after consulting with and receiving recommendations from DDW, and after any necessary hearing, shall, if it determines such action to be necessary to protect the health, safety, or welfare of the public, prescribe WRRs for water that is used or proposed to be used as recycled water. On November 03, 2015, LASAN in collaboration with DDW held a public hearing to consider the proposed expansion of

the AWPf and the use of up to 100% recycled water in the Barrier. On December 18, 2015, DDW transmitted to the Regional Water Board an approval letter with recommendations concerning the expansion of the AWPf.

40. Section 13540 of the CWC requires that recycled water only be injected into an aquifer used as a source of domestic water supply if DDW finds the recharge will not degrade the quality of the receiving aquifer as a source of water supply for domestic purposes. In its December 18, 2015 letter, DDW approved the August 2015 Title 22 Engineering Report. That report concluded that since the initiation of the DGBP operation, improvements in groundwater quality have been observed as a result of the high quality recycled water injected at the Barrier, which increases the available assimilative capacity in the basin. This trend is expected to continue after Phase II of the AWPf Ultimate Expansion is online.
41. CWC Section 13523(b) requires that reclamation requirements be established in conformance with the uniform statewide water recycling criteria established pursuant to Water Code section 13521. Section 13562 of the Water Code requires DDW to adopt uniform water recycling criteria for indirect potable reuse for groundwater recharge. The final water recycling criteria for Groundwater Replenishment Reuse (GWRR) developed by DDW became effective on June 18, 2014.

VIII. OTHER APPLICABLE PLANS, POLICIES, AND REGULATIONS

42. The Regional Water 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, as amended by various Regional Water Board resolutions. The Basin Plan designates beneficial uses for surface and groundwater; establishes narrative and numeric water quality objectives that must be attained or maintained to protect the designated (existing and potential) beneficial uses and to conform with the state's antidegradation policy; and includes implementation provisions, programs, and policies to protect all waters in the region. In addition, the Basin Plan incorporates all applicable State Water Board and Regional Water Board plans and policies and other pertinent water quality policies and regulations.
43. The Basin Plan incorporates the 22 CCR primary MCLs by reference. This incorporation is prospective, including future changes to the incorporated provisions as the changes take effect. Groundwater designated for use as domestic or municipal supply shall not contain concentrations of chemicals constituents and radionuclides in excess of the MCLs. The Basin Plan also specifies that groundwaters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.
44. The Basin Plan contains water quality objectives for the West Coast Groundwater Basin, which is the receiving water affected by the injection of recycled water at the Barrier. The beneficial uses of the West Coast Groundwater Basin are as follows:

TABLE 5. GROUNDWATER BENEFICIAL USES - LOS ANGELES COASTAL PLAIN

West Coast Basin (Department of Water Resources Basin No. 4-11.03) Receiving Water Name	Beneficial Use(s)
Underlying Ports of Los Angeles and Long Beach	Existing Beneficial Uses: Industrial service supply (IND); industrial process supply (PROC); and agricultural supply (AGR).

West Coast Basin (Department of Water Resources Basin No. 4-11.03) Receiving Water Name	Beneficial Use(s)
Underlying El Segundo, Seaward of Barrier	Existing Beneficial Uses: IND, PROC, and AGR
Remainder of Basin	Existing Beneficial Uses: Municipal and Domestic Water Supply (MUN); IND; PROC; and AGR.

45. The mineral water quality objectives for this groundwater basin are:

TABLE 6. WATER QUALITY OBJECTIVES FOR GROUNDWATER

DWR Basin No.	Basin	Objectives (mg/L)			
		TDS	Sulfate	Chloride	Boron
4-11	West Coast Basin Confined Aquifers	800	250	250	1.5

46. Pursuant to CWC section 106.3, it is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking and sanitary purposes. This Order promotes that policy by requiring injected water to meet MCLs designed to protect public health and ensure that water is safe for domestic use.

47. Pursuant to CWC section 13263(g), discharges of waste into waters of the state are privileges, not rights. Nothing in this Order creates a vested right to continue the discharge. Water Code section 13263 authorizes the Regional Water Board to issue waste discharge requirements that implement any relevant water quality control plan.

48. This Order includes limits on quantities, rates, and concentrations of chemical, physical, biological, and other constituents in the advanced treated recycled water that is injected into groundwater.

49. A goal of the Recycled Water Policy (State Water Board Resolution No. 2013-0003) is to increase the beneficial use of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Recycled Water Policy directs the Regional Water Quality Control Boards to collaborate with generators of municipal wastewater and interested parties in the development of Salt and Nutrient Management Plans (SNMPs) to manage the loadings of salts and nutrients to groundwater basins in a manner that is protective of beneficial uses, thereby supporting the sustainable use of local waters. A Salt and Nutrient Management Plan and its associated CEQA documentation were jointly prepared by the Central Basin and West Coast Basin stakeholders and approved by the RWQCB on February 12, 2015, with the adoption of Resolution No. R15-001.

50. DDW has established NLs for constituents in drinking water, including n-nitrosodimethylamine (NDMA), that do not pose a significant human health risk based on the most current scientific data, but warrant notification. NLs are established as precautionary measures for contaminants that may be considered candidates for establishment of MCLs, but have not yet undergone or completed the regulatory standard process prescribed for the development of MCLs and are not drinking water standards. A list of these constituents and their current associated NLs is provided in Table M-9 of the Monitoring and Reporting Program (MRP). The

response level is the concentration of a contaminant in drinking water delivered for human consumption at which DDW recommends that additional steps beyond notification be taken to reduce public exposure to the contaminant. For example, NDMA includes a NL of 10 ng/L and response level of 300 ng/L.

51. CWC sections 13267 and 13383 authorize the Regional Water Board to require technical and monitoring reports. The attached MRP establishes monitoring and reporting requirements to implement federal and state requirements.

Section 13267(b) of the Water Code states, in part:

In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging or who proposes to discharge within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste outside of its region shall furnish under penalty of perjury, technical or monitoring program reports which the Regional Board requires. The burden, including costs of these reports shall bear a reasonable relationship to the need for the reports and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.

Section 13267(d) of the Water Code states, in part:

The state board or a regional board may require any person, including a person subject to waste discharge requirements under section 13263, who is discharging, or who proposes to discharge, wastes or fluid into an injection well, to furnish the state board or regional board with a complete report on the condition and operation of the facility or injection well, or any other information that may be reasonably required to determine whether the injection well could affect the quality of the waters of the state.

52. The need for the technical and monitoring reports required by this Order, including the Monitoring and Reporting Program, are based on the ROWD and Engineering Report; the recommendations from DDW; and other information in the Regional Water Board's files for the facility. The technical and monitoring reports are necessary to assure compliance with these waste discharge requirements and water recycling requirements. The burden, including costs, of providing the technical reports required by this Order bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

53. On October 28, 1968, the State Water Board adopted Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality of Waters in California* (Resolution 68-16), establishing an antidegradation policy for the State Water Board and Regional Water Boards. Resolution 68-16 requires that existing high quality waters be maintained unless a change is demonstrated to be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses of waters, and will not result in water quality less than that prescribed in applicable policies. Resolution No. 68-16 also prescribes Waste Discharge Requirements for dischargers to high quality waters that will result in the best practicable treatment or control of the discharge necessary to assure that a pollution or nuisance will not occur and the highest water quality consistent with

maximum benefit to the people of the State will be maintained. The Regional Water Board's Basin Plan implements and coordinates, by reference, the state anti-degradation policy.

54. This Order is consistent with Resolution 68-16. Groundwater recharge with recycled water for later extraction and use in accordance with the Recycled Water Policy, and State and federal water quality laws, is to the benefit of the people of the state of California. Nonetheless, groundwater recharge projects using recycled water have the potential to lower water quality in the basin. The Regional Water Board finds that, based on available information and monitoring data, any positive change in the existing high quality of the groundwater basin as a result of the groundwater recharge allowed by this Order will be consistent with maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not cause an exceedance of applicable water quality standards for the basin. As described in the findings herein, the Project Sponsors are implementing the best practicable treatment or control of the recycled water to be injected into the basin for groundwater recharge. Compliance with this Order will protect present and anticipated beneficial uses of the groundwater, ensure attainment of water quality prescribed in applicable policies, and avoid any conditions of pollution or nuisance.

IX. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) AND NOTIFICATION

55. The LASAN 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 TIWRP to achieve water recycling and construction of a recycled water distribution system.
 - B. Final Mitigated Negative Declaration of 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 by the City of Los Angeles Bureau of Engineering and LADWP, September 1998. The project consists of development of the AWPf, 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.
56. In addition to the CEQA documents described above, the City of Los Angeles, Bureau of Engineering, prepared the *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.
57. Class 11, Category 6, of the CEQA guidelines (section 15311 of State CEQA guidelines) allows for the construction of structures accessory to existing uses, including industrial uses; therefore Phase 2 of the AWPf Ultimate Expansion is also

exempt from CEQA. LASAN received a Notice of Exemption from the City of Los Angeles, Office of the City Clerk on April 10, 2013.

58. The 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 2110, et seq., Division 13 (California Environmental Quality Act), Public Resources Code] in accordance with Section 15308, Title 14, California Code of regulations.
59. Pursuant to CWC Section 13320, any aggrieved party may seek review of this Order by filing a petition with the State Water Board in accordance with Title 23 CCR, sections 2050-2068. The State Water Board must receive the petition by 5:00 p.m., 30 days after adoption of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at: http://waterboards.ca.gov/public_notices/petitions/water_quality.
60. The Regional Water Board has notified the Project Sponsors, interested agencies, and persons of its intent to issue this Order for the production and use of recycled water and has provided them with an opportunity to submit written comments. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to these WDRs/WRRs.

THEREFORE, IT IS HEREBY ORDERED that Order No. R4-2003-0134 and its associated MRP and amendments (Order R4-2010-0183, R4-2011-0034, and R4-2003-0134-A03) are rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the CWC (commencing with section 13000) and regulations and guidelines adopted thereunder, and California Code of Regulations title 22, division 4, chapter 3, the Project Sponsors shall comply with the requirements in this Order. This action in no way prevents the Los Angeles Regional Water Quality Control Board from taking enforcement action for past violations of the previous order.

X. INFLUENT SPECIFICATIONS

The influent to the AWPf shall be TIWRP tertiary-treated effluent as described in this Order and shall at all times be adequately oxidized.

XI. RECYCLED WATER TREATMENT SPECIFICATIONS

Treatment of the recycled water shall be as described in the findings of this Order and as described in DDW's approval letter issued on December 18, 2015 (See Attachment B).

XII. RECYCLED WATER DISCHARGE LIMITS

1. The advanced treated recycled water shall not contain constituents in excess of the following limits:

TABLE 7. AWPf RECYCLED WATER DISCHARGE LIMITATIONS

Constituents	Units	<u>Monthly Average of 4 Consecutive Samples</u>	<u>Average of Initial and Confirmation Sample</u>	Running Annual Average	Weekly Maximum
TDS	mg/L	--	--	800	--
Chloride	mg/L	--	--	250	--

Constituents	Units	<u>Monthly Average of 4 Consecutive Samples</u>	<u>Average of Initial and Confirmation Sample</u>	Running Annual Average	Weekly Maximum
Sulfate	mg/L	--	--	250	--
Boron	mg/L	--	--	1.5	--
Total Nitrogen	mg/L	10 ⁴	--	--	--
<u>Nitrate as nitrogen</u>	<u>mg/L</u>	--	--	40	--
<u>Nitrite as nitrogen</u>	<u>mg/L</u>	--	--	4	--
<u>Nitrate + Nitrite as nitrogen</u>	<u>mg/L</u>	--	--	40	--
<u>Lead</u>	<u>mg/L</u>	--	0.015	--	--
<u>Copper</u>	<u>mg/L</u>	--	1.0 ²	--	--
<u>Perchlorate</u>	<u>mg/L</u>	--	0.006	--	--
Total Organic Carbon (TOC)	mg/L	--	--	0.5 ³	--
Total Coliform	MPN/100 mL	--	--	--	1.1
<u>Remaining Pollutants with Primary MCLs</u>	<u>varies</u>	--	--	<u>varies</u> ⁴	--

2. Compliance with the recycled water discharge limits shall be determined after disinfection and before injection into the Barrier.
3. The turbidity of the recycled water shall not exceed 0.2 NTU more than 5 percent of the time in any 24 hour period, and shall not exceed 0.5 NTU at any time.
4. The pH of the product water for injection shall be between 6.5 and 8.5 at all times.

XIII. GENERAL REQUIREMENTS

1. The monthly running average RWC injected into the Barrier may be up to 100% of the total water injected into the Barrier as long as the TOC 20-week running average for the previous 52 weeks has not exceeded 0.5 mg/L. If additional diluent water is required to supplement the recycled water injected into the Barrier, the diluent water shall be imported potable water. A monthly running average RWC shall be determined by dividing the total volume of recycled water injected by the total volume of water injected over a period of 120 months.

⁴ If the average of the results of four consecutive samples collected exceeds 10 mg/L total nitrogen, the Project Sponsors shall suspend subsurface application of recycled water.

² Based on the secondary MCL for Copper, which is the more stringent drinking water standard.

³ Based on a 20-week running average of all TOC results, and the average of the last four TOC results (Refer to 22 CCR § 60320.218).

⁴ The recycled water shall comply with each pollutant's respective MCL and the MCLs vary depending on the pollutant.

2. LASAN is currently in the process of upgrading the AWPf disinfection system to an Advanced Oxidation Process (AOP); however, the current system uses chlorine disinfection and the AOP will not be in place immediately following the effective date of this Order. LASAN will continue to use chlorine disinfection until the AOP is fully operational. During the interim when chlorine disinfection is used, it 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 the total chlorine residual and the 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 the highest concentration of the tracer is observed in the AWPf recycled water from the chamber.
 - A. For the purposes of calculating and demonstrating compliance with the CT requirement, the Project Sponsors shall use modal contact times of 296 minutes, 157 minutes, and 101 minutes, for flow rates of 2.5 MGD, 5.0 MGD, and 6.0 MGD, respectively. The modal contact times for intermediate flow rates shall correspond with the curve developed during the 2014 tracer study.
 - B. In case the RO operation is changed to produce recycled water at flow rates less than 2.5 or greater than 6.0 MGD, additional tracer studies shall be conducted to develop a curve to estimate the contact times at various flow rates. The studies shall follow the protocol outlined in the *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 DDW and the Regional Water Board within 30 days of completing the studies.
 - C. If requested by the Project Sponsors to reduce the CT value required for disinfection, a reverse osmosis membrane integrity testing plan shall be submitted to DDW for approval to obtain viral removal credits.
3. Recycled water shall not be used for direct human consumption or for the processing of food or drink intended for human consumption.
4. As noted in the August 2015 Amended Engineering Report, the recycled water injected into the Barrier shall be retained underground for a minimum of six months prior to being withdrawn at a domestic supply well.
5. Bypass, discharge, or delivery to the use area of inadequately treated recycled water, at any time, is prohibited.
6. The TIWRP, AWPf, and injection wells shall be adequately protected from inundation and damage by storm flows.
7. Recycled water use or disposal shall not result in earth movement in geologically unstable areas.
8. The TIWRP and AWPf shall not be the source of pollution or nuisance within the TIWRP service area, including odors that unreasonably affect beneficial uses, odors injurious to health, or odors offensive to the senses of members of a community.
9. The recycled water injected into the Barrier shall meet all MCLs and other limits specified in the Drinking Water Quality and Monitoring Requirements in 22 CCR, chapter 15 and other limits, as follows:

- a. Inorganic chemicals in 22 CCR, [section 64431](#), Table 64431-A (except for nitrogen compounds);
 - b. Radionuclides in 22 CCR, [section 64442](#), Table 4, ~~sections~~ 64442 and 64443;
 - c. Organic chemicals in 22 CCR, [section 64444](#), Table 64444-A;
 - d. Any new federal or State maximum contaminant level upon adoption;
 - e. Disinfection byproducts in 22 CCR, [section 64533](#), Table 64533-A;
 - f. Lead and copper; and
 - g. Secondary Maximum Contaminant Levels in 22 CCR, [section 64449](#), Tables 64449-A and 64449-B (Upper levels).
10. The Project Sponsors shall, at all times, properly operate and maintain all treatment facilities and control systems (and related appurtenances) which are installed or used by the Project Sponsors to achieve compliance with the conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls (including appropriate quality assurance procedures).
11. A copy of these requirements shall be maintained at the Facility so as to be available at all times to operating personnel.
12. Supervisors and operators of this advanced water treatment plant shall possess a certificate of appropriate grade as specified in CCR, Title 23, Division 3, Chapter 26.
13. For any material change or proposed change in character, location, or volume of recycled water, or its uses, the Project Sponsors shall submit, at least 120 days prior to the proposed change, an engineering report or addendum to the existing engineering report to the Regional Water Board and DDW (pursuant to CWC Division 7, Chapter 7, Article 4, Section 13522.5 and CCR, Title 22, Division 4, Chapter 3, Article 7, Section 60323) for approval. The engineering report shall be prepared by a qualified engineer registered in California.
14. If the Project Sponsors choose to use one or more wastewater chemicals in lieu of TOC, the Project Sponsors shall obtain approval from DDW as required in 22 CCR § 60320.218.

XIV. DDW Specifications

Refer to Attachment B for a complete list of DDW's specifications. The following specifications include only those that have not been incorporated elsewhere in the Order.

1. Per the approved 2015 Amended Engineering Report, an initial maximum RWC shall be 1.0.
2. Recycled water shall comply with Article 5.2 – Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application, section 60320.200 through 60320.228 of the Title 22, California Code of Regulations.
3. Membrane Integrity Testing (MIT) shall be performed on each of the MF membrane units, a minimum of once every 24 hours of operation and shall include the following:
 - A. The log removal value (LRV) for *Cryptosporidium* shall be calculated and the value reported after the completion of each MIT.

- B. The MIT shall have a resolution that is responsive to an integrity breach on the order of 3 μm or less.
 - C. Calculations of the LRV shall be based on a pressure decay rate (PDR) value with an ending pressure that provides a resolution of 3 μm or less.
 - D. The MIT shall have a sensitivity to verify a LRV equal to or greater than 4.0.
- 4. Recycled water shall meet the pathogen reduction requirements in 22 CCR § 60320.108 which includes achieving at least 12-log enteric virus reduction, 10-log *Giardia* cyst reduction, and 10-log *Cryptosporidium* oocyst reduction.
 - 5. Pursuant to 22 CCR § 60320.122, the Project Sponsors shall submit an Operation Optimization Plan for the AWPf to the Regional Water Board and DDW for review and approval prior to start-up of the expanded facility and any time there is a change in operations, maintenance, or monitoring. At a minimum, the Operation Optimization Plan shall identify and describe the operations, maintenance, analytical methods, monitoring (grab and online) necessary for the GRRP to meet the requirements and the reporting of monitoring results. The Operation Optimization Plan shall also, at all times, be representative of the current operations, maintenance, and monitoring of the GRRP.
 - 6. The AWPf shall at all times meet the requirements in 22 CCR § 60320.122. Operation and Optimization Plan.
 - 7. The Project Sponsors shall follow the procedures described in the approved Operation Optimization Plan for the AWPf at all times.
 - 8. Prior to start-up of phase II of the AWPf, the Project Sponsors shall validate and confirm the actual set points on the alarms described in the Title 22 Engineering Report and they shall be specified in the Operation Optimization Plan. As required by the Engineering Report, the Project Sponsors shall validate and confirm the actual set points for free chlorine and UV parameters and demonstrate that the advanced oxidation process will provide no less than 0.5-log (69 percent) reduction of 1,4-dioxane.
 - 9. The UV system shall be operated with online monitoring and built-in automatic reliability features that must trigger automatic diversion of AWPf recycled water to waste by the following critical alarm set-points:
 - A. UV dose less than 920 mJ/cm^2 or a new set-point approved by DDW after the AOP commissioning;
 - B. UV transmittance less than 95%;
 - C. Complete UV failure; or
 - D. Free chlorine residual less than 2.0 mg/L , or a new set-point approved by DDW after the AOP commissioning.

XV. ADDITIONAL PROVISIONS

- 1. Injection of the advanced treated recycled water shall not cause or contribute to an exceedance of water quality objectives in the West Coast Basin.
- 2. **Groundwater Well Replacement.** Replacement or addition of injection wells to the Dominguez Gap Barrier will not require a report of material change, filing of a new Report of Waste Discharge, or submitting an updated Engineering Report, provided:

- A. The additional injection capacity does not violate any requirement in this Order;
 - B. At least 30 days prior to installation of an additional well, the Project Sponsors submit in writing, the purpose, design, and location of the well to DDW and the Regional Water Board;
 - C. The Regional Water Board, in consultation with DDW, approves the location of the additional well⁵;
 - D. Within 90 days after the installation or replacement of the well, the Project Sponsors submit in writing, the complete geologic and electrical logs and as-built construction diagrams of the injection wells to DDW and the Regional Water Board.
3. The Project Sponsors shall submit to the Regional Water Board, under penalty of perjury, self-monitoring reports according to the specifications contained in the MRP, as directed by the Executive Officer and signed by a designated responsible party.
 4. This Order does not exempt the Project Sponsors from compliance with any other laws, regulations, or ordinances which may be applicable; it does not legalize the recycling and use facilities; and it leaves unaffected any further constraint on the use of recycled water at certain site(s) that may be contained in other statutes or required by other agencies.
 5. This Order does not alleviate the responsibility of the Project Sponsors to obtain other necessary local, state, and federal permits to construct facilities necessary for compliance with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.
 6. This Order may be modified, revoked and reissued, or terminated for cause, including but not limited to, failure to comply with any condition in this Order; endangerment of human health or environment resulting from the permitted activities in this Order; obtaining this Order by misrepresentation or failure to disclose all relevant facts; or acquisition of new information that could have justified the application of different conditions if known at the time of Order adoption. The filing of a request by the Project Sponsors for modification, revocation and reissuance, or termination of the Order or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.
 7. The Project Sponsors shall furnish, within a reasonable time, any information the Regional Water Board or DDW may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. Upon request, the Project Sponsors shall also furnish the Regional Water Board with copies of records required to be kept under this Order for at least three years.
 8. In an enforcement action, it shall not be a defense for the Project Sponsors that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Project Sponsors shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for

⁵ If the Regional Water Board fails to approve or deny the proposed construction within 30 days of receipt of the proposal, the proposal shall be deemed approved.

example, when the primary source of power of the treatment facility fails, is reduced, or is lost.

9. This Order includes the attached *Standard Provisions Applicable to Waste Discharge Requirements* (Attachment A). If there is any conflict between the provisions stated in this Order and the Standard Provisions, the provisions stated in this Order shall prevail.
10. This Order includes the attached MRP No. CI-8654. If there is any conflict between provisions stated in the MRP and the Standard Provisions, those provisions stated in the MRP prevail.
11. The DDW conditions that are not explicitly included in this Order are incorporated herein by this reference, and are enforceable requirements of this Order. Any violation of a term in this Order, that is identical to a DDW condition, will constitute a single violation.

XVI. REOPENER

1. This Order may be reopened to include the most scientifically relevant and appropriate limitations for this discharge, including a revised Basin Plan limit based on monitoring results, studies, or other Board policy, or the application of an attenuation factor based upon an approved site-specific attenuation study.
2. The WDRs/WRRs may be reopened to modify limitations for constituents to protect beneficial uses, based on new information not available at the time this Order was adopted.
3. If after additional monitoring, reporting, and trend analysis documenting changed aquifer conditions, this Order may be reopened to ensure the groundwater is protected in a manner consistent with state and federal water quality laws and regulations.
4. This Order may be reopened to incorporate any new regulatory requirements for sources of drinking water or injection of recycled water for groundwater recharge to aquifers that are used as a source of drinking water, that are adopted after the effective date of this Order.
5. This Order may be reopened upon a determination by DDW that treatment and disinfection of the AWPf recycled water is not sufficient to protect human health.

XVII. ENFORCEMENT

1. The requirements of this Order are subject to enforcement under Water Code sections 13261, 13263, 13264, 13265, 13268, 13350, 13300, 13301, 13304, 13350, and enforcement provisions in Water Code, Division 7, Chapter 7 (Water Reclamation).
2. The Project Sponsors are subject to the terms and conditions of this Order.

XVIII. EFFECTIVE DATE OF THE ORDER

This Order takes effect upon its adoption.

I, Samuel Unger, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the Regional Water Board, Los Angeles Region on October 13, 2016.

Samuel Unger, P.E.
Executive Officer

REVISED TENTATIVE

FIGURE 2 - DOMINGUEZ GAP INJECTION WELL ALIGNMENT

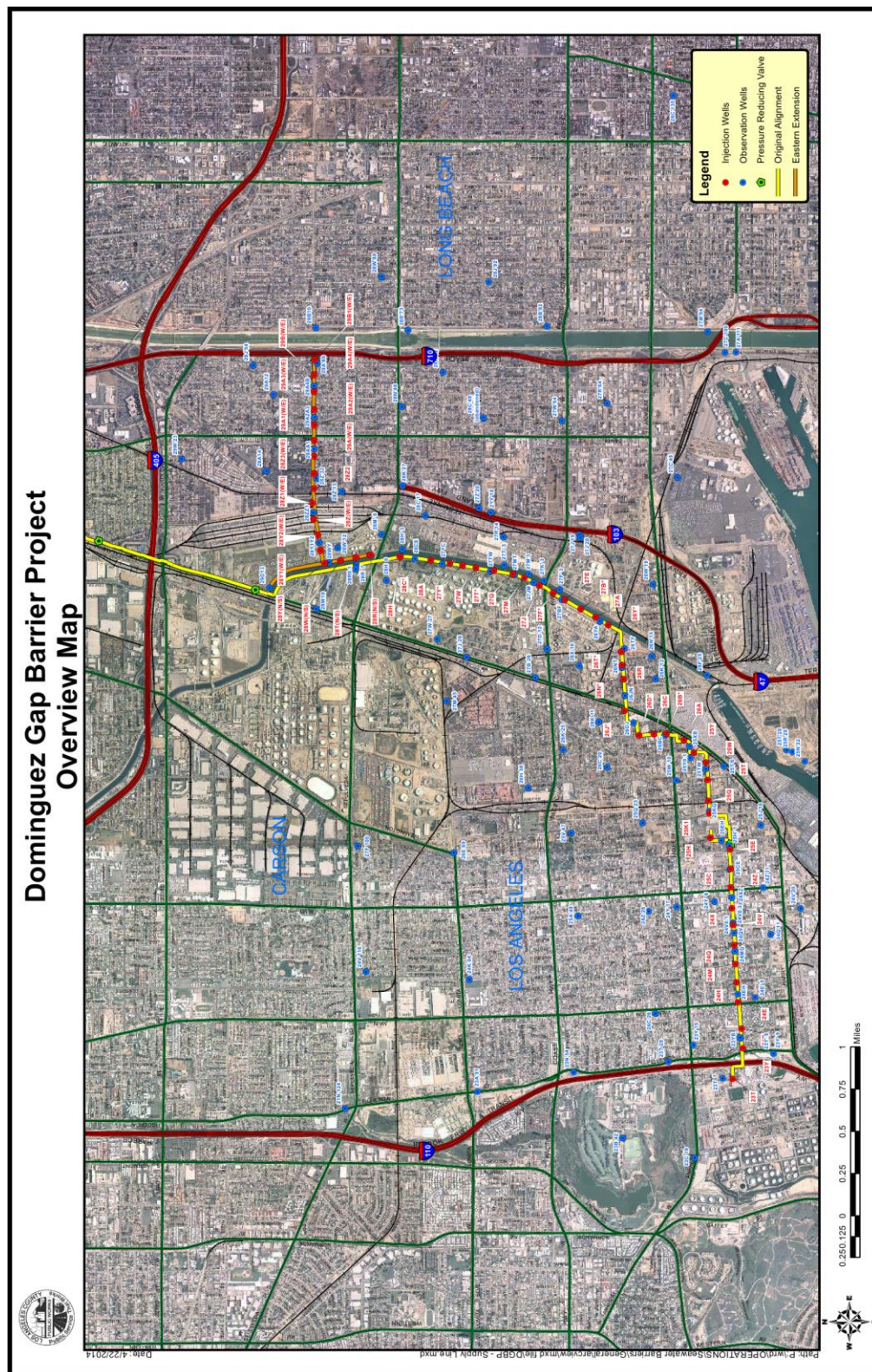


FIGURE 3 - DOMINGUEZ GAP GROUNDWATER AQUIFERS

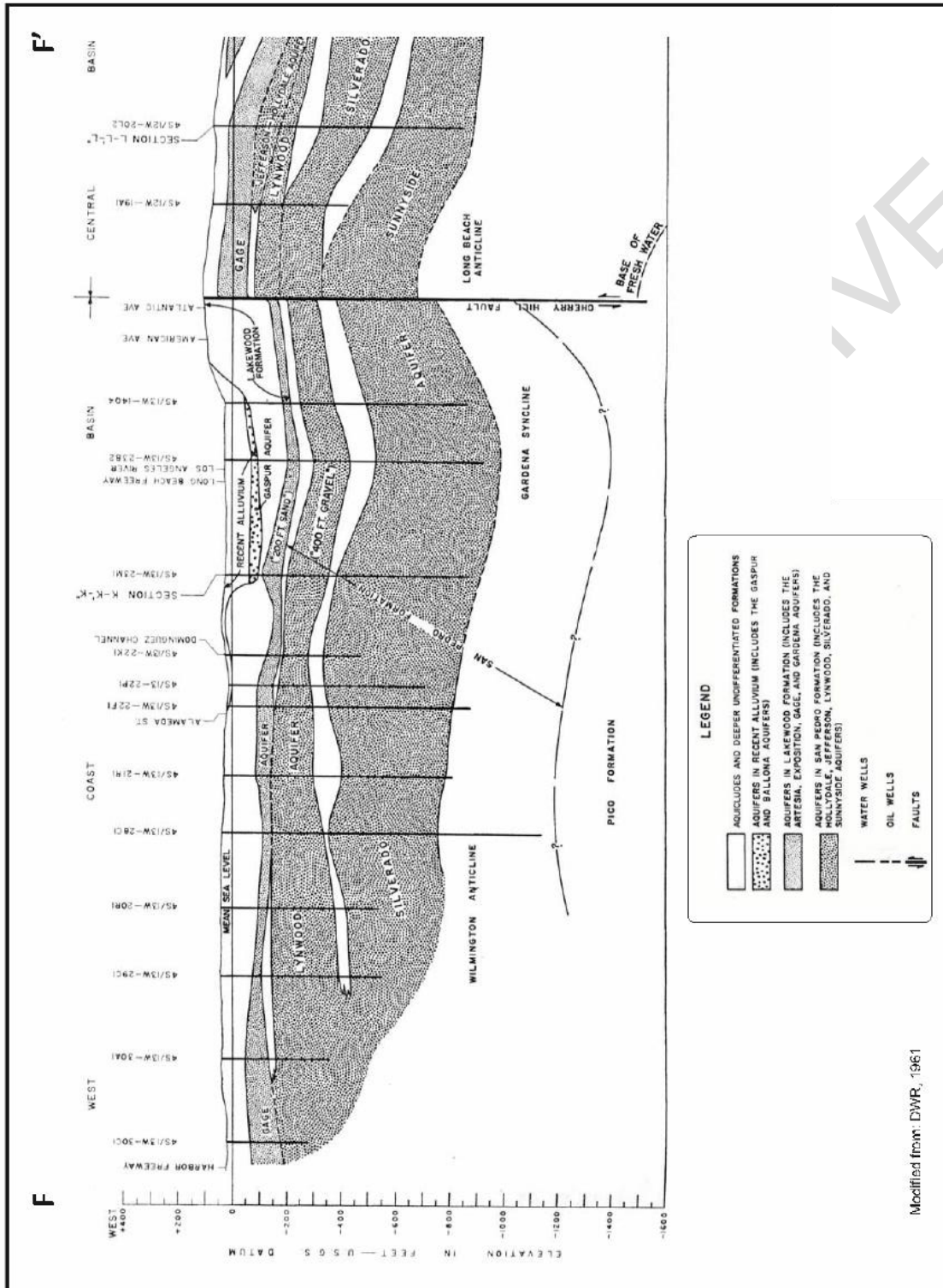


FIGURE 4 – PROCESS FLOW DIAGRAM OF THE EXISTING FACILITY

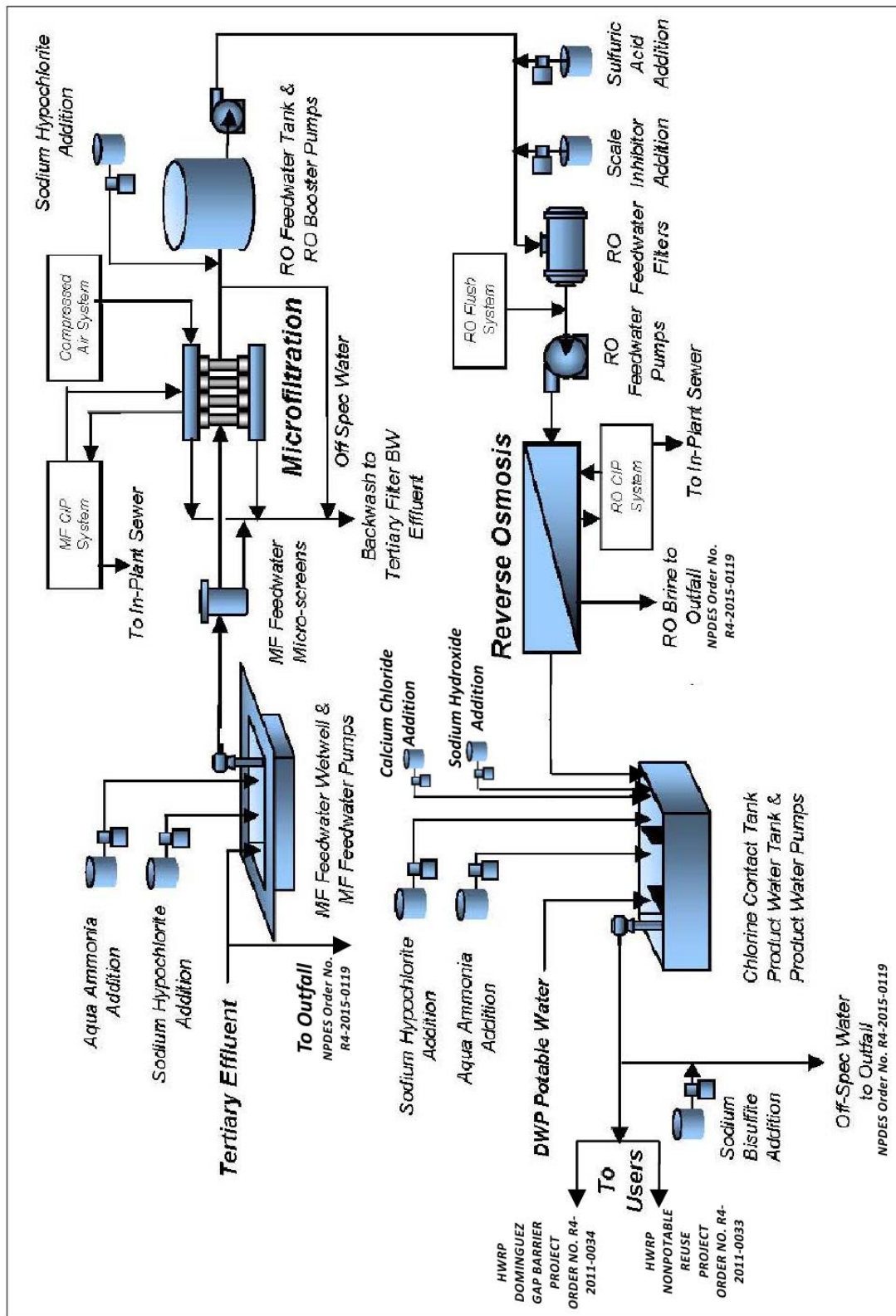


FIGURE 5 – PROCESS FLOW DIAGRAM OF THE EXPANDED FACILITY

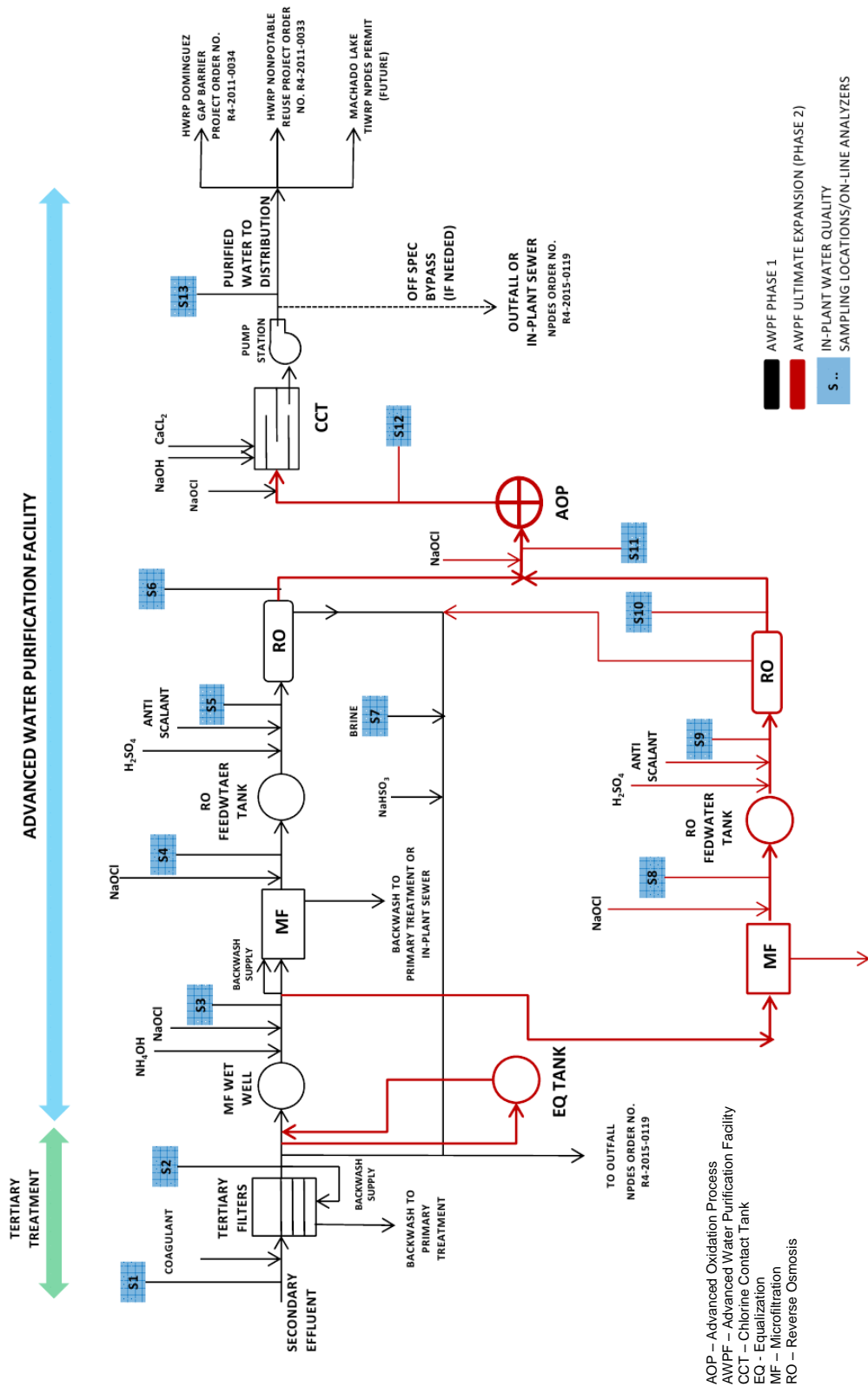


FIGURE 6 – SIMULATED RECYCLED WATER FRACTION GAGE AQUIFER

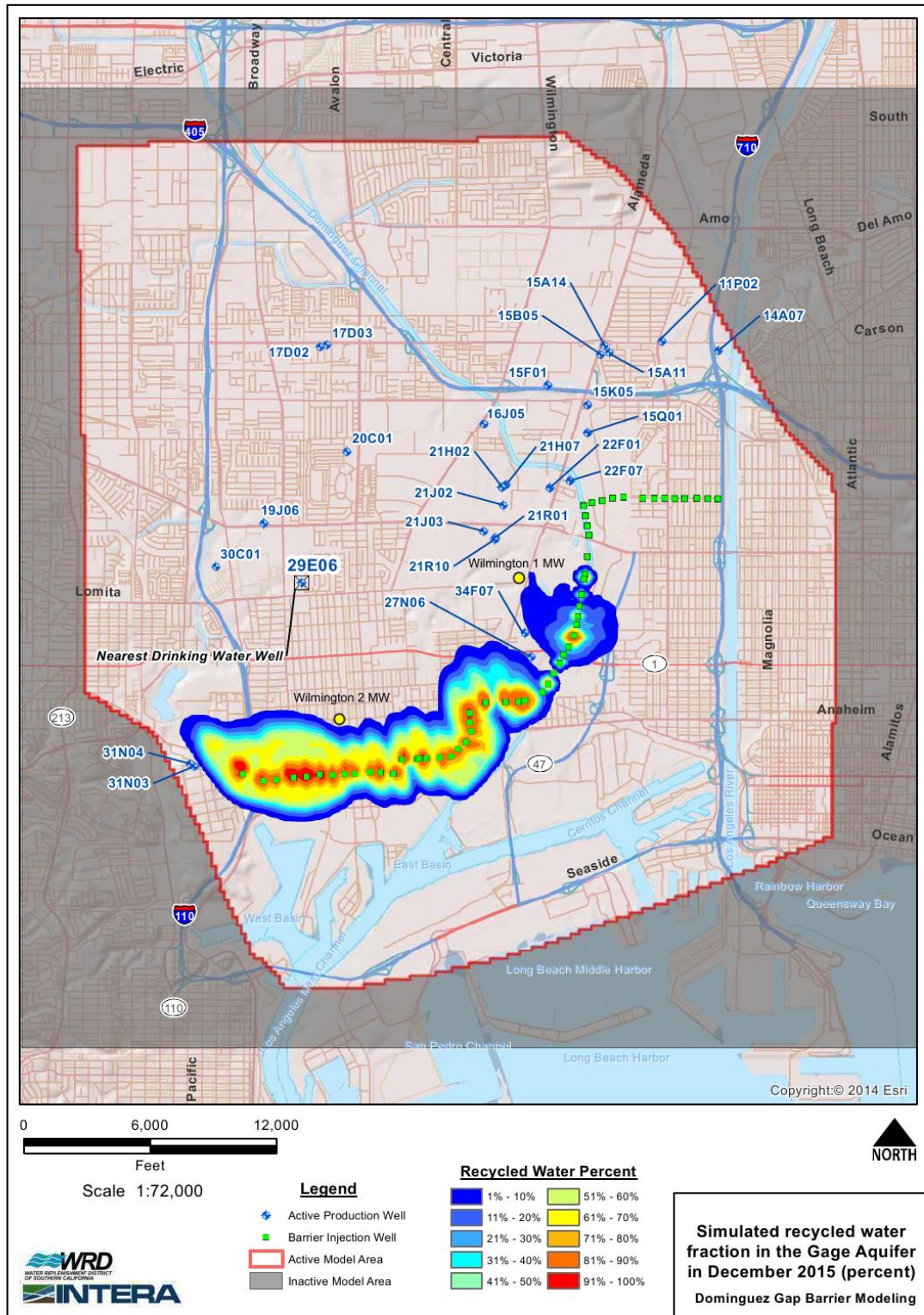
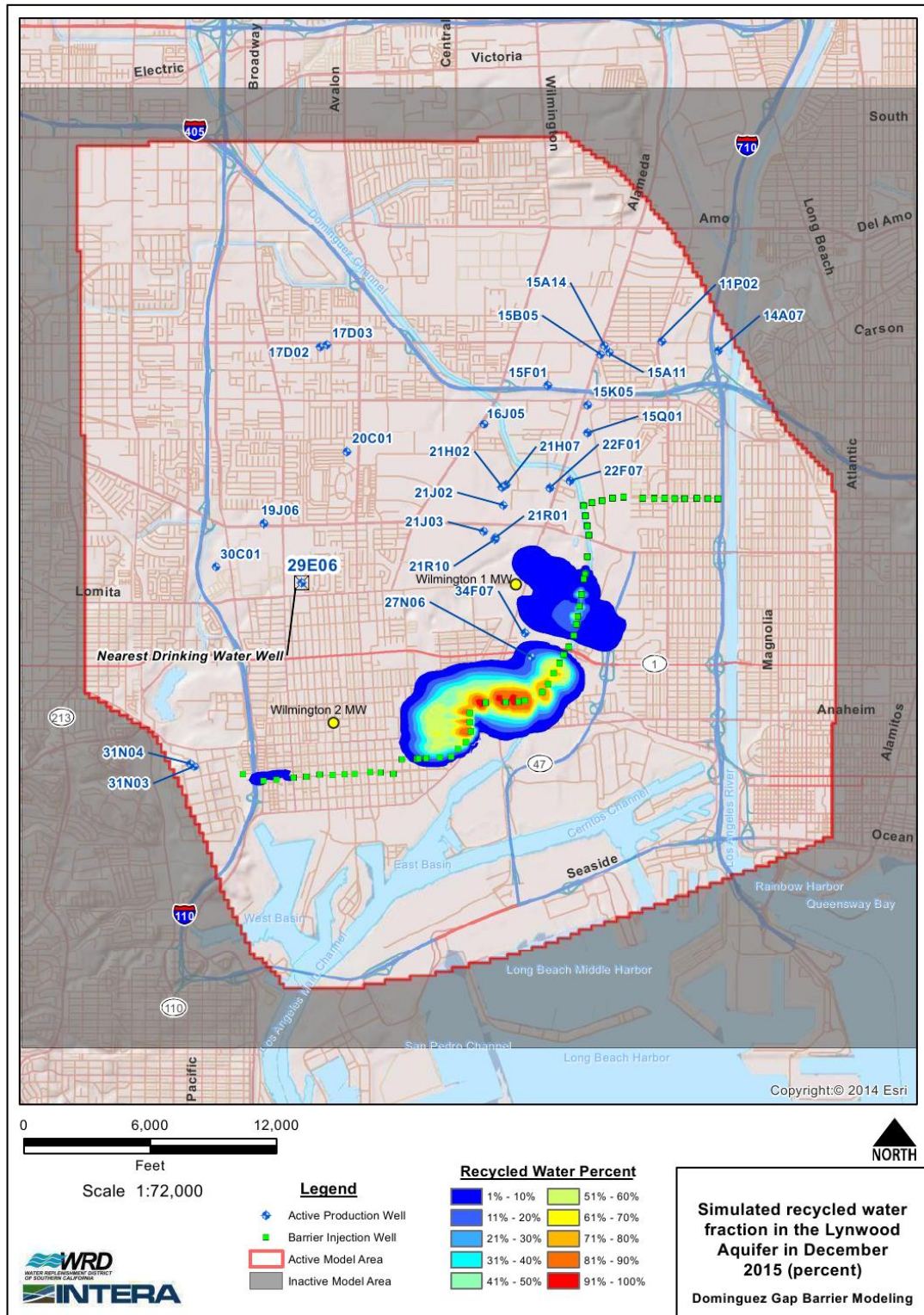


FIGURE 7 – SIMULATED RECYCLED WATER FRACTION LYNWOOD AQUIFER



**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION**

**MONITORING AND REPORTING PROGRAM (CI-8654)
(FILE NO. 97-208)**

FOR

**WASTE DISCHARGE REQUIREMENTS
AND
TITLE 22 WATER RECYCLING REQUIREMENTS**

ISSUED TO

**CITY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS
CITY OF LOS ANGELES DEPARTMENT OF WATER AND POWER
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
TERMINAL ISLAND WATER RECLAMATION PLANT
HARBOR WATER RECYCLING PROJECT
DOMINGUEZ GAP BARRIER PROJECT**

Contents

I.	GENERAL MONITORING AND REPORTING REQUIREMENTS.....	3
II.	DDW MONITORING REQUIREMENTS	8
III.	MONITORING REQUIREMENTS	9
IV.	REPORTING REQUIREMENTS	20
V.	CERTIFICATION STATEMENT.....	26

Tables

TABLE M-1: INFLUENT MONITORING	9
TABLE M-2: RECYCLED WATER MONITORING	10
TABLE M-3: RADIOACTIVITY	11
TABLE M-4: INORGANICS WITH PRIMARY MCLS OR ACTION LEVELS	11
TABLE M-5: REGULATED ORGANIC CHEMICALS	11
TABLE M-6: CONSTITUENTS/PARAMETERS WITH SECONDARY MCLS.....	12
TABLE M-7: DISINFECTION BYPRODUCTS.....	12
TABLE M-8: GENERAL PHYSICAL AND GENERAL MINERALS	12
TABLE M-9: CONSTITUENTS WITH NOTIFICATION LEVELS & FREQUENCY.....	13
TABLE M-10: REMAINING PRIORITY POLLUTANTS	14
TABLE M-11: CONSTITUENTS OF EMERGING CONCERN	15
TABLE M-12: SURROGATES.....	15

TABLE M-13: BLENDED RECYCLED WATER MONITORING	17
TABLE M-14: 3-MONTH GROUNDWATER MONITORING WELLS.....	18
TABLE M-15: ¼-DISTANCE GROUNDWATER MONITORING WELLS.....	19
TABLE M-16: GROUNDWATER MONITORING	19
TABLE M-17: QUARTERLY REPORT PERIODS AND DUE DATES	22

REVISED TENTATIVE

MONITORING AND REPORTING PROGRAM (MRP) CI-8654

This Monitoring and Reporting Program is issued by the Regional Water Quality Control Board, Los Angeles Region (Regional Water Board) pursuant to California Water Code (CWC) section 13267(b)(1), which authorizes the Regional Water Board to require the submittal of technical and monitoring reports. The reports required by this MRP are necessary to ensure compliance with Waste Discharge Requirements (WDRs) and Water Recycling Requirements (WRRs) Order No. R4-2016-XXXX for the Advanced Water Purification Facility (AWPF) at the Terminal Island Water Reclamation Plant (TIWRP). The City of Los Angeles, Bureau of Sanitation (LASAN), the City of Los Angeles Department of Water and Power (LADWP), and the Los Angeles County Department of Public Works (LACDPW), are collectively referred to as the Project Sponsors and are responsible for compliance with Order No. R4-2016-XXXX. The Project Sponsors shall implement this MRP on the effective date of this Order. Failure to comply with this MRP could result in the imposition of monetary civil liability pursuant to Division 7 of the California Water Code and other applicable laws.

I. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Project Sponsors shall monitor the flow and quality of the following according to the manner and frequency specified in this MRP
 - A. Influent to the AWPF (TIWRP tertiary effluent);
 - B. Recycled water from AWPF after disinfection and before injection into the Barrier;
 - C. Receiving groundwater, and
 - D. The blend of recycled water and diluent water (if potable water is added at ~~to~~ the ~~chlorine contact~~blending tank).
2. Monitoring reports shall include, but are not limited to, the following:
 - A. Analytical results;
 - B. Location of each sampling station where representative samples are obtained, including a map, at a scale of 1 inch equals 1,200 feet or less, that clearly identifies the locations of all injection wells, monitoring wells, and production wells;
 - C. Analytical test methods used and the corresponding minimum reporting levels (MRLs);
 - D. Name(s) of the laboratory that conducted the analyses;
 - E. Copy of laboratory certifications by the State Water Resources Control Board, Division of Drinking Water's (DDW) Environmental Laboratory Accreditation Program (ELAP);
 - F. A summary of quality assurance and control (QA/QC) measures, including documentation of chain of custody; and,
 - G. Applicable Maximum Contaminant Levels (MCLs), Notification Levels (NLs), response levels, or DDW conditions or recycled water discharge limit.
 - H. A summary of noncompliance during the monitoring period.
3. Although not required to be included in the monitoring reports unless specifically requested by the Regional Water Board or DDW, the Project Sponsors shall have in place written sampling protocols. For groundwater monitoring, the sampling protocols shall outline the methods and procedures used for measuring water levels; purging

wells; collecting samples; decontaminating equipment; containing, preserving, and shipping samples, and maintaining appropriate documentation. Also, the sampling protocols shall include the procedures for handling, storing, testing, and disposing of purge and decontamination waters generated from the sampling events.

4. The Project Sponsors shall notify this Regional Water Board and DDW by telephone or electronic means within 24 hours of knowledge of any violations of this Order that may endanger human health or the environment. Written confirmation shall be submitted within 5 working days from date of notification. The report shall include, but shall not be limited to the following information, as appropriate:
 - A. The nature and extent of the violation;
 - B. The date and time when the violation started, when compliance was achieved, and when injection was suspended and restored, as applicable;
 - C. The duration of the violation;
 - D. The cause(s) of the violation;
 - E. Any corrective and/or remedial actions that have been taken and/or will be taken with a time schedule for implementation to prevent future violations; and,
 - F. Any impact of the violation.
5. Samples shall be analyzed using analytical methods described in Title 40 of the Code of Federal Regulations (40 CFR) part 141; or where no methods are specified for a given pollutant, by methods approved by DDW, the Regional Water Board and/or the State Water Board. The Project Sponsors shall select the analytical methods that provide Minimum Reporting Levels (MRLs) lower than the limits prescribed in this Order or as low as possible that will provide reliable data.
6. For unregulated chemical analyses, the Project Sponsors shall select methods according to the following approach:
 - A. Use the drinking water methods or wastewater methods sufficient to evaluate all water quality objectives and protect all beneficial uses;
 - B. Use DDW-recommended methods for unregulated chemicals, if available;
 - C. If there is no DDW-recommended drinking water method for a chemical, and more than a single United States Environmental Protection Agency (USEPA)-approved method is available, use the most sensitive of the USEPA-approved method;
 - D. If there is no USEPA-approved method for a chemical, and more than one method is available from the scientific literature and commercial laboratory, after consultation with DDW, use the most sensitive method; and
 - E. If no approved method is available for a specific chemical, the Project Sponsors' laboratory may develop or use its own methods and should provide the analytical methods to DDW for review. Those methods may be used until DDW-recommended or USEPA-approved methods are available.
7. Pursuant to Title 22 of the California Code of Regulations (22 CCR) § 60320.204, analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by DDW utilizing DDW-approved drinking water methods. Analyses for constituents other than those having primary or secondary MCLs shall be described in the Operation Optimization Plan.

8. The Project Sponsors shall instruct its laboratories to establish calibration standards so that the MRLs (or its equivalent if there is a different treatment of samples relative to calibration standards) are the lowest calibration standard. At no time shall analytical data derived from extrapolation beyond the lowest point of the calibration curve be used.
9. For regulated constituents, the laboratory conducting analyses shall be certified by ELAP or approved by DDW or the RWQCB.
10. Upon request by the Project Sponsors, the Regional Water Board, in consultation with DDW and the State Water Board Quality Assurance Program, may establish MRLs, in any of the following situations:
 - A. When the pollutant has no established method under 40 CFR part 141;
 - B. When the method under 40 CFR part 141 for the pollutant has a MRL higher than the limit specified in this Order; or
 - C. When the Project Sponsors agree to use a test method that is more sensitive than those specified in 40 CFR part 141.
11. Samples shall be analyzed within allowable holding time limits as specified in 40 CFR part 141. All QA/QC analyses shall be run on the same dates that samples are actually analyzed. The Project Sponsors shall retain the QA/QC documentation in its files for 3 years and make available for inspection and/or submit them when requested by the Regional Water Board or DDW. Proper chain of custody procedures shall be followed, and a copy of this documentation shall be submitted with the quarterly report.
12. Each monitoring report shall contain a separate section titled "Summary of Non-compliance" which discusses the compliance record and the corrective actions taken or planned that may be needed to bring the discharge into full compliance with waste discharge requirements. This section shall clearly list all non-compliance with discharge requirements as well as all excursions of recycled water limitations.
13. Compliance with Primary MCLs

This section applies to recycled water or recharge water only, and does not apply to pre-existing conditions such as from background groundwater samples prior to the Project startup. Compliance with the primary MCLs is based on a running annual average except for ~~those pollutants that are acutely toxic such as nitrate, nitrite, nitrate+nitrite~~total nitrogen, perchlorate, lead, copper, and any other ~~acutely toxic~~ pollutant for which DDW ~~determines should not be based on a running annual average~~establishes an MCL.

- A. If a result of the monitoring performed exceeds a contaminant's MCL or action level (for lead and copper), the Project Sponsors shall collect another sample within 72 hours of notification of the result and then have it analyzed for the contaminant as confirmation.
- B. For a contaminant whose compliance with its MCL or action level is not based on a running annual average (except for total nitrogen), if the average of the initial and confirmation sample exceeds the contaminant's MCL or action level, or the confirmation sample is not collected and analyzed pursuant to this subsection, the Project Sponsors shall notify DDW and Regional Water Board within 24 hours and initiate weekly monitoring until four consecutive weekly results are below the contaminant's MCL or action level. If the running four-week average exceeds the contaminant's MCL or action level, the Project Sponsors shall notify DDW and

Regional Water Board within 24 hours and, if directed by the DDW or Regional Water Board, suspend application of the recycled municipal wastewater.

- C. For a contaminant whose compliance with its MCL is based on a running annual average, if the average of the initial and confirmation sample exceeds the contaminant's MCL, or a confirmation sample is not collected and analyzed pursuant to this subsection, the Project Sponsors shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the contaminant's MCL.
- D. If the running four-week average exceeds the contaminant's MCL, the Project Sponsors shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in a report submitted to DDW and Regional Water Board no later than 45 days following the quarter in which the exceedance occurred.
- E. If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, the Project Sponsors shall notify DDW and Regional Water Board within 48 hours of knowledge of the exceedance and, if directed by DDW or Regional Water Board, suspend application of the recycled municipal wastewater.

14. Compliance with Secondary MCLs

If the annual average of the monitoring results exceeds a contaminant's secondary MCL, the Project Sponsors shall initiate quarterly monitoring of the recycled municipal wastewater for the contaminant. In addition, if the running annual average of quarterly-averaged results exceeds a contaminant's secondary MCL or upper limit, the Project Sponsors shall describe the reason(s) for the exceedance and any corrective actions taken. A report shall be submitted to the Regional Water Board no later than 45 days following the quarter in which the exceedance occurred, with a copy concurrently provided to DDW. The annual monitoring may resume if the running annual average of quarterly results does not exceed a contaminant's secondary MCL or upper limit.

15. Compliance with Notification Levels

- A. Each quarter, the Project Sponsors shall sample and analyze the AWPf treated water for DDW-specified chemicals having notification levels (NLs).
- B. If a result from the AWPf treated water monitoring exceeds a NL, within 72 hours of notification of the result the Project Sponsors shall collect another sample and have it analyzed for the contaminant as confirmation. If the average of the initial and confirmation sample exceeds the contaminant's NL, or a confirmation sample is not collected and analyzed, the Project Sponsors shall initiate weekly monitoring for the contaminant until the running four-week average no longer exceeds the NL.

16. Compliance with Nitrogen Compounds Control

This section applies to the recycled water, or alternatively recharge water, only and does not apply to pre-existing conditions such as from background groundwater samples prior to Project startup or to results unrelated to the Project.

- A. Total Nitrogen samples shall be analyzed within 72 hours and the results shall be reported to the Project Sponsors within the same 72 hours if the result of any single sample exceeds 10 mg/L.
- B. If the average of the results of two consecutive total nitrogen samples exceeds 10 mg/L, the Project Sponsors shall:

1. Take a confirmation sample and notify DDW and the Regional Water Board within 48 hours of being notified by the laboratory;
 2. Investigate the cause for the exceedances and take actions to reduce the total nitrogen concentrations to ensure continued or future exceedances do not occur, and
 3. Initiate additional monitoring for nitrogen compounds as described in the approved Operation Optimization Plan, including locations in the groundwater basin, to identify elevated concentrations and determine whether such elevated concentrations exceed or may lead to an exceedance of a nitrogen-based MCL.
- C. If the average of the results of four consecutive total nitrogen samples exceeds 10 mg/L, the Project Sponsors shall suspend the subsurface application of recycled municipal wastewater. Subsurface application shall not resume until corrective actions have been taken and at least two consecutive total nitrogen sampling results are less than 10 mg/L.
- D. Following DDW and Regional Water Board approval, the Project Sponsors may initiate reduced monitoring frequencies for total nitrogen, nitrate, and nitrite. The Project Sponsors may apply to the Department and Regional Water Board for reduced monitoring frequencies for total nitrogen, nitrate, and nitrite if, for the most recent 12 months:
1. The average of all results did not exceed 5 mg/L total nitrogen; and
 2. The average of a result and its confirmation sample (taken within 24 hours of receipt of the initial result) did not exceed 10 mg/L total nitrogen.
 3. If the results of reduced monitoring exceed the total nitrogen concentration of 10 mg/L, the Project Sponsors shall revert to the monitoring frequencies for total nitrogen prior to implementation of the reduced frequencies. Reduced frequency monitoring shall not resume unless the requirements in section I.16.D.1 and I.16.D.2 are met.
17. Compliance with Total Organic Carbon
- A. If the AWPf recycled water limitation for TOC is exceeded based on the 20 week average, the Project Sponsors shall:
1. Immediately suspend injection of recycled municipal wastewater until at least two consecutive results, three days apart, are less than the limit;
 2. Notify DDW and the Regional Water Board within seven days of suspending operations; and
 3. Within 60 days, submit a report to DDW and the Regional Water Board describing the reasons for the exceedance and the corrective actions taken to avoid future exceedances. At a minimum the corrective actions shall include a reduction of the RWC sufficient to comply with the limit.
- B. If the final AWPf recycled water limitation for TOC is exceeded based on the average of the last four results, the Project Sponsors shall, within 60 days of being notified of the results, submit a report to DDW and the Regional Water Board describing the reasons for the exceedance and the corrective actions taken to avoid future exceedance.

18. For all bacterial analyses, sample dilutions shall be performed so the range of values extends from 1 to 800. The detection methods used for each analysis shall be reported with the results of the analyses.
19. Quarterly monitoring for AWPf recycled water and groundwater shall be performed during the months of February, May, August, and November. Semiannual monitoring for AWPf recycled water shall be performed during the months of February and August. Semiannual monitoring for groundwater shall be performed during the months of May and November. Should there be instances when monitoring could not be done during these specified months, the Project Sponsors shall conduct the monitoring as soon as it can and state in the monitoring report the reason monitoring could not be conducted during the specified month. Results of quarterly analyses shall be reported in the quarterly monitoring report following the analysis.
20. For CECs subject to the State Water Board Recycled Water Policy as amended January 22, 2013, analytical methods for laboratory analysis of CECs shall be selected to achieve the Reporting Limits presented in Table 1 of Attachment A of the Recycled Water Policy. The analytical methods shall be based on methods published by the USEPA, methods certified by DDW, or peer reviewed and published methods that have been reviewed by DDW, including those published by voluntary consensus standards bodies such as the Standards Methods Committee and the American Society for Testing and Materials International. Any modifications to the published or certified methods shall be reviewed by DDW and subsequently submitted to the Regional Water Board in an updated quality assurance project plan.

II. DDW MONITORING REQUIREMENTS

1. Continuous real-time monitoring and reporting of ultraviolet (UV) dose and free chlorine residual leaving the Advanced Oxidation Process (AOP) shall be conducted.
2. On-line monitoring of pH, free chlorine residual, UV dose, UV intensity, flow, and UV transmittance, must be provided at all times. Flow meters, pH meters, free chlorine residual analyzers, UV intensity sensors, and UV transmittance monitors must be properly calibrated.
3. All duty UV intensity sensors must be checked for calibration against a reference UV intensity sensor at least monthly.
4. The UV transmittance meter must be inspected and checked against a reference bench-top unit weekly to document accuracy.
5. The monitoring and reliability features, including automatic shutdown capability, shall be demonstrated to DDW during a plant inspection prior to final approval of Phase II of the AWPf expansion.
6. The reverse osmosis (RO) system shall be credited pathogen reduction at this facility in accordance with the amount demonstrated via online monitoring to ensure the integrity of the RO system. The effluent from each RO train (including each stage) shall be continuously monitored for conductivity. The daily average and maximum conductivity reading, minimum removal achieved, and the percent of time that the conductivity is greater than 350 micro-Siemens shall be reported. The Project Sponsors shall calculate and report the minimum removal achieved.

7. The microfiltration (MF) membrane effluent and RO product water shall also be monitored for turbidity continuously. The percent of time that the turbidity is greater than 0.2 NTU shall be reported for the MF membrane effluent.
8. The RO effluent shall be monitored for TOC via grab sample weekly and reported monthly. The RO influent and effluent shall also be monitored for TOC online and reported monthly. The average daily and maximum TOC reading and the percent of time the TOC reading is greater than 0.5 mg/L must be reported.
9. Monitoring wells shall be sampled as specified in the approved Operation Optimization Plan. These samples shall be monitored monthly for the first year of operation and the Project Sponsors may request, from DDW and the Regional Water Board, a reduction in monitoring after the first year.

III. MONITORING REQUIREMENTS

1. Influent Monitoring

- A. Influent monitoring is required to determine compliance with water quality conditions and standards and to assess the AWPf performance.
- B. The influent sampling station is located before tertiary treated water from TIWRP enters the MF treatment system of the AWPf. Influent samples shall be obtained on the same day that AWPf recycled water samples are obtained. The date and time of sampling shall be reported with the analytical values determined. Table M1 constitutes the influent monitoring program as follows:

TABLE M-1: INFLUENT MONITORING

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total flow	MGD	Recorder	Continuous ¹
Biochemical Oxygen Demand (BOD ₅ 20°C)	mg/L	24-hour composite	Weekly
Total Suspended Solids (TSS)	mg/L	24-hour composite	Daily ²
pH	pH units	Recorder	Continuous ¹
pH	pH units	Grab	Weekly
Turbidity ³	NTU	Recorder	Continuous ¹
Total Coliform ⁴	MPN/100 mL	Grab	Daily ²
Total Organic Carbon (TOC)	mg/L	24-hour composite	Weekly

¹ For those constituents that are continuously monitored, monthly minimum and maximum, and daily average values shall be reported.

² Daily shall mean 7 days per week unless otherwise specified.

³ Turbidity measurements shall be recorded a minimum of every 15 minutes and the daily average and daily maximum shall be reported.

⁴ If an influent sample tests positive for total coliform, the sample shall also be analyzed for *E. coli*.

2. Recycled Water Monitoring

- A. Recycled water monitoring is required to determine compliance with the Permit conditions; identify operational problems and aid in improving facility performance; and to provide information on wastewater characteristics and flows for use in interpreting water quality and biological data.
- B. Samples shall be collected from the channel downstream of the treatment location, where data collection is most likely to represent performance. Should the need for a change in the sampling station(s) arise in the future, the Project Sponsors shall seek approval of the proposed station by the Executive Officer prior to use.
- C. Table M-2 shall constitute the recycled water monitoring program as follows:

TABLE M-2: RECYCLED WATER MONITORING

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total recycled water flow	MGD	Recorder	Continuous ⁵
Turbidity	NTU	Recorder	Continuous ⁵
Total Residual Chlorine	mg/L	Recorder	Continuous ^{5,6}
Total coliform	MPN/100 mL	Grab	Daily ⁷
Total Organic Carbon (TOC) ⁸	mg/L	24-hour composite	Weekly
pH	pH units	Recorder	Continuous ⁵
Total nitrogen ⁹	mg/L	24-hour composite or grab	Weekly
Nitrate-N	mg/L	24-hour comp or grab	Weekly
Nitrite-N	mg/L	24-hour comp or grab	Weekly
Nitrate plus Nitrite	mg/L	24-hour comp or grab	Weekly
BOD ₅ 20°C	mg/L	24-hour comp.	Quarterly
Radioactivity (Table M-3)	pCi/L	Grab	Quarterly

⁵ For those constituents that are continuously monitored, the monthly minimum and maximum, and daily average values shall be reported.

⁶ Continuous real-time monitoring shall be recorded at a point after the recycled water has passed through the final chlorine contact basin or the AOP.

⁷ Daily shall mean 7 days per week unless otherwise specified.

⁸ Monitoring results for recycled water shall be reported as a single result and as a 20-week running average of all TOC results and the average of the last four TOC results. The daily average and maximum TOC reading and the percent of time that the TOC is greater than 0.5 mg/L shall be reported.

⁹ Total nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

Parameter	Units	Sample Type	Minimum Sampling Frequency
Inorganics with Primary MCLs (Table M-4)	µg/L	Grab	Quarterly
Regulated Organic Chemicals (Table M-5)	µg/L	Grab	Quarterly
Constituents/parameters with secondary MCLs (Table M-6)	--	Grab	Annually
Disinfection Byproducts (Table M-7)	µg/L	Grab	Quarterly
General Physical and Minerals (Table M-8)	--	Grab	Quarterly
Constituents with Notification Levels (Table M-9)	mg/L	Grab	See Table M-9
Remaining Priority Pollutants (Table M-10)	µg/L	Grab	Semiannually
Constituents of Emerging Concern (CECs) (Table M-11) ¹⁰	ng/L	Grab	See Table M-11
Surrogates (Table M-12) ¹⁰	--	See Table M-12	See Table M-12

TABLE M-3: Radioactivity

Constituent		
Combined Radium-226 and Radium-228	Tritium	Gross Beta Particle Activity
Gross Alpha Particle Activity (Including Radium-226 but excluding Radon and Uranium)	Strontium-90	Uranium

TABLE M-4: Inorganics with Primary MCLs or Action Levels

Constituent		
Aluminum	Copper	Lead
Antimony	Cadmium	Mercury
Arsenic	Total Chromium	Nickel
Asbestos ¹¹	Cyanide	Perchlorate
Barium	Fluoride	Selenium
Beryllium	Chromium (VI)	Thallium

TABLE M-5: Regulated Organic Chemicals

Constituent/Parameter		
Volatile Organic Chemicals (VOCs)		
Benzene	Dichloromethane	Toluene
Carbon Tetrachloride	1,2-Dichloropropane	1,2,4-Trichlorobenzene

¹⁰ The removal percentages shall also be reported for performance indicator CECs and surrogates.

¹¹ If four consecutive quarterly results for asbestos are less than the detection limit in 22 CCR [section 64432](#) in Table 64432-A monitoring frequency may be reduced to once every three years. Quarterly monitoring shall resume if asbestos is detected.

Constituent/Parameter		
Volatile Organic Chemicals (VOCs)		
1,2-Dichlorobenzene	1,3-Dichloropropene	1,1,1-Trichloroethane
1,4-Dichlorobenzene	Ethylbenzene	1,1,2-Trichloroethane
1,1-Dichloroethane	MTBE	Trichloroethylene
1,2-Dichloroethane	Monochlorobenzene	Trichlorofluoromethane
1,1-Dichloroethylene	Styrene	1,1,2-Trichloro-1,2,2-Trifluoroethane
cis-1,2-Dichloroethylene	1,1,2,2-Tetrachloroethane	Vinyl Chloride
Trans-1,2-Dichloroethylene	Tetrachloroethylene	Xylenes
Non-Volatile Synthetic Organics (SOCs)		
Alachlor	Dinoseb	Methoxychlor
Atrazine	Diquat	Molinate
Bentazon	Endothall	Oxamyl
Benzo(a)pyrene	Endrin	Pentachlorophenol
Carbofuran	Ethylene Dibromide (EDB)	Picloram
Chlordane	Glyphosate	PCBs
2,4-D (2,4-Dichlorophenoxyacetic Acid)	Heptachlor	Simazine
Dalapon	Heptachlor Epoxide	Thiobencarb
Dibromochloropropane	Hexachlorobenzene	Toxaphene
Di(2-ethylhexyl) adipate	Hexachlorocyclopentadiene	2,3,7,8-TCDD (Dioxin)
Bis(2-ethylhexyl) phthalate	Lindane	2,4,5-TP (Silvex)

TABLE M-6: Constituents/Parameters with Secondary MCLs

Constituent/Parameter		
Aluminum	MTBE	Total Dissolved Solids
Color	Odor Threshold	Specific Conductance
Copper	Silver	Sulfate
MBAS	Thiobencarb	Chloride
Iron	Turbidity	
Manganese	Zinc	

TABLE M-7: Disinfection Byproducts

Constituent/Parameter		
Bromate	Chlorite	
Total Trihalomethanes		
Bromodichloromethane	Chloroform	
Bromoform	Dibromochloromethane	
Haloacetic Acids		
Monochloroacetic Acid	Trichloroacetic Acid	Dibromoacetic Acid
Dichloroacetic Acid	Monobromoacetic Acid	

TABLE M-8: General Physical and General Minerals

Constituent		
Asbestos ¹²	Potassium	MBAS

¹² If four consecutive quarterly results for asbestos are less than the detection limit (0.2 MFL>10µg/L), monitoring frequency may be reduced to once every three years.

Constituent		
Calcium	Sodium	Odor
Chloride	Sulfate	Total Dissolved Solids
Copper	Zinc	Specific Conductance
Iron	Color	Total Hardness
Manganese	Corrosivity	

TABLE M-9: Constituents with Notification Levels & Frequency

Constituent	Units	Minimum Frequency
Boron	µg/L	Quarterly
N-butylbenzene	µg/L	Annually
Sec-butylbenzene	µg/L	Annually
Tert-butylbenzene	µg/L	Annually
Carbon Disulfide	µg/L	Annually
Chlorate	µg/L	Quarterly
2-chlorotoluene	µg/L	Annually
4-chlorotoluene	µg/L	Annually
Diazinon	µg/L	Annually
Dichlorofluoromethane (Freon 12)	µg/L	Annually
1,4-dioxane	µg/L	Quarterly
Ethyl Glycol	µg/L	Annually
Formaldehyde	µg/L	Quarterly
HMX	µg/L	Annually
Isopropylbenzene	µg/L	Annually
Manganese	µg/L	Annually
Methyl Isobutyl Ketone (MIBK)	µg/L	Annually
Naphthalene	µg/L	Annually
N-Nitrosodiethylamine (NDEA)	µg/L	Annually
N-Nitrosodimethylamine (NDMA)	µg/L	Quarterly
N-Nitrosodi-n-propylamine (NDPA)	µg/L	Annually
Propachlor	µg/L	Annually
N-propylbenzene	µg/L	Annually
RDX	µg/L	Annually
Tertiary Butyl Alcohol (TBA)	µg/L	Quarterly
1,2,3-Trichloropropane (1,2,3-TCP)	µg/L	Annually
1,2,4-Trimethylbenzene	µg/L	Annually
1,3,5-Trimethylbenzene	µg/L	Annually
2,4,6-Trinitrotoluene (TNT)	µg/L	Annually
Vanadium	µg/L	Quarterly

TABLE M-10: Remaining Priority Pollutants

Constituent		
Acenaphthene	4-bromophenyl phenyl ether	Chrysene
Acrolein	Bis(2-chloroisopropyl) ether	Acenaphthylene
Acrylonitrile	Bis(2-chlorethoxy) methane	Anthracene
Benzidine	Methyl chloride (dichloromethane)	Benzo(ghi) perylene
Chlorobenzene	Methyl bromide (bromomethane)	Fluorene
Hexachloroethane	Hexachlorobutadiene	Phenanthrene
Chloroethane	Isophorone	Dibenzo(a,h)anthracene
Bis(2-chloroethyl) ether	Nitrobenzene	Indeno(1,2,3-c,d) pyrene
2-chloroethyl vinyl ether	2-nitrophenol	Pyrene
2-chloronaphthalene	4-nitrophenol	Aldrin
2,4,6-trichlorophenol	2,4-dinitrophenol	Dieldrin
Parachlorometa cresol	4,6-dinitro-o-cresol	4,4'-DDT
2-chlorophenol	N-nitrosodiphenylamine	4,4'-DDE
1,3-dichlorobenzene	Phenol	4,4'-DDD
3,3'-dichlorobenzidine	Butyl benzyl phthalate	Alpha-endosulfan
2,4-dichlorophenol	Di-n-butyl phthalate	Beta-endosulfan
2,4-dimethylphenol	Di-n-octyl phthalate	Endosulfan sulfate
2,4-dinitrotoluene	Diethyl phthalate	Endrin aldehyde
2,6-dinitrotoluene	Dimethyl phthalate	Alpha-BHC
1,2-diphenylhydrazine	Benzo(a) anthracene	Beta-BHC
Fluoranthene	Benzo(b) fluoranthene	Delta-BHC
4-chlorophenyl phenyl ether	Benzo(k) fluoranthene	

D. Constituents of Emerging Concern (CEC) Monitoring

- Consistent with the January 22, 2013 amended Recycled Water Policy, the Project Sponsors may request the removal of specific CECs from the monitoring program if supported by data.
- Analytical methods for CECs shall be selected to achieve the reporting limits presented in Table M-11 in accordance with the Recycled Water Policy. The analytical methods shall be based on methods published by the USEPA, methods certified by DDW, or peer reviewed and published methods that have been reviewed by DDW. Any modifications to the published or certified methods shall be reviewed and approved by the Regional Water Board and DDW.
- For performance indicator CECs and surrogates, removal percentages shall be reported in addition to the measured concentrations.
- The removal percentage shall be calculated based on the following formula:

$$\text{Removal Percentage} = ([X_{in} - X_{out}]/X_{in}) * 100$$

$$X_{in} = \text{Concentration in recycled water prior to a treatment process}$$

$$X_{out} = \text{Concentration in recycled water after a treatment process}$$
- The removal percentages for the surrogates shall be determined based on the daily averages for electrical conductivity and weekly values for TOC and included in the quarterly compliance monitoring reports.

6. The removal percentages for the performance indicator CECs shall be included in the Annual Summary Report.

TABLE M-11: CONSTITUENTS OF EMERGING CONCERN

Constituent	Relevance/ Indicator Type	Sample Type	Minimum Sampling Frequency	Reporting Limit (µg/L)	Monitoring Locations	
					Prior to RO	Following treatment prior to well injection
17β-estradiol	Health	Grab	Annually	0.001		X
Caffeine	Health & Performance	Grab	Annually	0.05	X	X
NDMA	Health & Performance	Grab	Quarterly	0.002	X	X
Triclosan	Health	Grab	Annually	0.05		X
DEET	Performance	Grab	Semiannually ¹³	0.05	X	X
Sucralose	Performance	Grab	Quarterly	0.1	X	X

TABLE M-12: Surrogates

Constituent	Sample Type	Minimum Sampling Frequency	Monitoring Locations	
			Prior to RO Treatment	Following Treatment prior to Well Injection
Electrical Conductivity	Online	Continuous ¹⁴	X	X
TOC	24-hour Comp	Weekly	X	X

E. Evaluation of Pathogenic Microorganism Removal

For the purposes of evaluating the performance of the following treatment facilities/units with regards to pathogenic microorganism removal, the Project Sponsors shall include the results of the monitoring specified below in its quarterly compliance monitoring reports:

1. Terminal Island WRP and AWPf: For the purpose of demonstrating that the necessary log reductions are achieved at TIWRP and at the facilities up to the influent of the AWPf, Project Sponsors shall monitor TIWRP's final effluent continuously for turbidity and daily (7 days per week) for total coliform

¹³ Baseline monitoring will be conducted for three years to determine the appropriate frequency for standard operation monitoring.

¹⁴ For those constituents that are continuously monitored, the monthly minimum, maximum, and daily average values shall be reported.

concentrations. The Project Sponsors shall report the daily (7 days per week) TIWRP final effluent coliform analyses, the daily average and daily maximum turbidity, and the percent of time the TIWRP final effluent turbidity is greater than 5 NTU. Reports shall be submitted to the Regional Water Board and DDW on a monthly basis;

2. AOP (UV and hypochlorous acid at the AWPf): For each day of operation, the Project Sponsors shall report the calculated daily sodium hypochlorite dose (based on the pump speed and bulk feed concentration), percent reduction based on daily average of chloramine (via total residual chlorine) measured upstream and downstream of the AOP, and the applied UV power shall be reported. For UV, Project Sponsors shall report the UV system dose (expressed as greater than a certain threshold such as 300 millijoules/cm²), UV transmittance (daily minimum, maximum, and average), UV intensity for each reactor (daily minimum, maximum, and average) and the total UV power applied; and
3. Based on the calculation of log reduction achieved each day by the entire treatment system, from the Terminal Island Water Reclamation Plant to the public water supply wells, the Project Sponsors shall report the value and "Yes" or "No" for each day as to whether the necessary log reductions (i.e. 10-logs for *Giardia* and *Cryptosporidium*, and 12-logs for virus) have been achieved. An overall log reduction calculation shall be provided only for those days when a portion of the treatment system does not achieve the necessary log reductions.

F. Pathogen Reduction Exceedances

Within 24 hours of becoming aware of an exceedance of the pathogen reduction required in 22 CCR 60320.108(a) based on monitoring required in subsection (c), the Project Sponsors shall immediately investigate the cause and initiate corrective actions. The Project Sponsors shall immediately notify DDW and the Regional Water Board if the recycled water fails to meet the pathogen reduction criteria longer than 4 consecutive hours, or more than a total of 8 hours during any 7-day period. Failure of shorter duration shall be reported to the Regional Water Board and DDW no later than 10 days after the month in which the failure occurred.

3. Diluent Water Monitoring

- A. The Project Sponsors propose to use 100 percent recycled water for injection at the Barrier. However, if this becomes infeasible due to unforeseen circumstances (e.g., insufficient supply of recycled water, treatment issues, etc.), injection of diluent water (i.e., Metropolitan Water District of Southern California's (MWD) potable water) will become necessary in order to prevent seawater intrusion. Pursuant to 22 CCR § 60320.214, the Project Sponsors are exempt from nitrate and nitrite monitoring in diluent water when using a DDW-approved drinking water source for diluent water. This exemption is applicable to Project Sponsors since MWD's potable water is a DDW-approved drinking water source. This exemption only applies to nitrate and nitrite monitoring in potable diluent water and in no way exempts the Project Sponsors from any other monitoring requirements for diluent water or recycled water from the AWPf. 22 CCR § 60320.214 requires ensuring diluent water does not exceed primary MCLs or NLs and is produced implementing a DDW-approved water quality monitoring plan for DDW-specified contaminants to demonstrate compliance with the primary MCLs and NLs.

B. MWD currently delivers potable water to parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino, and Ventura counties. As part of its operation, MWD performs rigorous monitoring to comply with all necessary drinking water standards. Regular updates of water quality monitoring data are provided to its customers throughout the year to assure delivery of high quality water and to demonstrate regulatory compliance. During the circumstance when diluent water use becomes necessary, the Project Sponsors shall diligently review and track the quality of MWD potable water for compliance with primary MCLs and NLs based on the information provided by MWD's Water Quality Compliance Team.

4. Blended Recycled Water Monitoring

The Project Sponsors propose to use 100 percent recycled water for injection into the Barrier. Should the use of potable water become necessary to supplement the recycled water, monitoring for blended recycled water and diluent water shall be implemented consistent with the current MRP, as follows:

TABLE M-13: BLENDED RECYCLED WATER MONITORING

Parameter	Units	Sample Type	Minimum Sampling Frequency
Total Blended Flow	MGD	---	Total Monthly
Total Residual Chlorine	mg/L	Grab	Weekly
TDS	mg/L	Grab	Weekly
Sulfate	mg/L	Grab	Weekly
Chloride	mg/L	Grab	Weekly
Boron	mg/L	Grab	Weekly
Total Nitrogen	mg/L	Grab	Weekly

5. Treatment Conditions

If a sample of the advanced treated recycled water is greater than 10 ng/L for NDMA, within 72 hours of knowledge of the result, the Project Sponsors shall collect another sample as confirmation. If the average of the initial and confirmation sample is greater than 10 ng/L, or a confirmation sample is not collected and analyzed, the Project Sponsors shall initiate weekly monitoring for NDMA until the running four-week average is less than 10 ng/L. If the running four-week average is greater than 10 ng/L, the Project Sponsors shall describe the reasons for the results and provide a schedule for completion of corrective actions in the next quarterly report submitted to the Regional Water Board, with a copy provided to DDW. If the running four-week average is greater than 10 ng/L for sixteen consecutive weeks, the Project Sponsors shall notify DDW and the Regional Water Board within 48 hours of knowledge of the exceedance and, if directed DDW or the Regional Water Board, suspend injection of the advanced treated recycled water.

6. Groundwater Monitoring

The Project Sponsors shall monitor the quality of groundwater to assess any impact(s) from the recharge of recycled water. Representative samples of groundwater shall be collected from major aquifers, including the Gaspar, Gage, Lynwood, Upper Silverado, and Lower Silverado Aquifer. The groundwater monitoring wells that shall be monitored

are included in Table M-14 and M-15. The parameters to be monitored and the frequency of monitoring are included in Table M-16.

Those constituents that are consistently reported as non-detect, may be eligible for reduced monitoring, upon approval by the Executive Officer.

If any of the monitoring results indicate that an MCL has been exceeded or coliforms are present in the monitoring wells at the Barrier as a result of the use of recycled water, the Project Sponsors shall notify DDW and the Regional Water Board within 72 hours of receiving the results and make note of any positive finding in the next monitoring report submitted to the Regional Water Board.

Upon an exceedance of 10 ng/L for NDMA in groundwater monitoring samples, the project Sponsors shall notify DDW and the Regional Water Board within 30 days and begin monthly sampling of groundwater for NDMA from the well with the exceedance. Groundwater sampling may return to the frequency stated in this MRP if the average of three consecutive monthly samples is 10 ng/L or less.

Since the adoption of Order R4-2003-0134, the Regional Water Board reduced groundwater monitoring frequencies based on monitoring data from 2003 to 2008. The following groundwater monitoring requirements are consistent with these revised groundwater monitoring requirements, consistent with the DDW-approved Engineering Report.

TABLE M-14: 3-MONTH GROUNDWATER MONITORING WELLS

Well Location	Well ID	Well No.	Total Depth	Top of Perforation	Bottom of Perforation	Aquifer Monitored
		(Feet below ground surface)				
23T7	312D	101179	185	99	174	Gage
26JN	351G	101221	165	135	155	Gage
26JN	351F	101220	330	255	320	Lynwood
27YC	879XX	101452	95	75	85	Gaspur
27YC	879WW	101451	185	110	175	Gage
27YC	879VV	101885	250	205	215	Lynwood

TABLE M-15: ¼-DISTANCE GROUNDWATER MONITORING WELLS

Well Location	Perforated Zone	Well No.	Total Depth	Top of Perforation	Bottom of Perforation	Aquifer Monitored
Wilmington 1	Zone 1	100070	1,040	915	935	Lower Silverado (Sunnyside)
	Zone 2	100071	800	780	800	
	Zone 3	100072	570	550	570	Upper Silverado
	Zone 4	100073	245	225	245	Lynwood
	Zone 5	100074	140	120	140	Gage
Wilmington 2	Zone 1	100075	1,030	950	970	Lower Silverado (Sunnyside)
	Zone 2	100076	775	755	775	Upper Silverado
	Zone 3	100077	560	540	560	Lynwood
	Zone 4	100078	410	390	410	Lynwood
	Zone 5	100079	140	120	140	Gage

TABLE M-16: GROUNDWATER MONITORING

Parameters	Units	Sample Type	Minimum Sampling Frequency
Water level elevation ¹⁵	feet	---	Quarterly
Total Residual Chlorine	mg/L	Grab	Quarterly Annually
Total Organic Carbon (TOC)	mg/L	Grab	Quarterly
Total Coliform	MPN/100 mL	Grab	Quarterly
BOD ₅ 20°C	mg/L	Grab	Annually
Oil and grease	mg/L	Grab	Annually
Nitrate-N	mg/L	Grab	Quarterly
Nitrite-N	mg/L	Grab	Quarterly
Total Nitrogen ¹⁶	mg/L	Grab	Quarterly
Sulfate	mg/L	Grab	Quarterly
Chloride	mg/L	Grab	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly
Odor	TON	Grab	Quarterly
Color	CU	Grab	Quarterly
Total Suspended Solids (TSS)	mg/L	Grab	Annually
Turbidity	NTU	Grab	Quarterly

¹⁵ Water level elevations shall be measured to the nearest 0.01 feet, and referenced to mean sea level.

¹⁶ Total nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

Parameters	Units	Sample Type	Minimum Sampling Frequency
Foaming Agents	mg/L	Grab	Quarterly
Specific Conductance	µmhos/cm	Grab	Quarterly
Corrosivity	LI	Grab	Quarterly
Silver	µg/L	Grab	Quarterly
Iron	µg/L	Grab	Quarterly
Zinc	µg/L	Grab	Quarterly
Aluminum	µg/L	Grab	Quarterly
Manganese	µg/L	Grab	Quarterly
Copper	µg/L	Grab	Quarterly
MTBE	µg/L	Grab	Quarterly
Thiobencarb	µg/L	Grab	Quarterly
Fluoride	µg/L	Grab	Annually
Radioactivity (Table M-3)	pCi/L	Grab	Annually
Remaining Inorganics with Primary MCLs (Table M-4)	µg/L	Grab	Annually
Remaining Regulated Organics (Table M-5)	µg/L	Grab	Annually
Remaining Constituents/parameters with secondary MCLs (Table M-6)	--	Grab	Annually
Disinfection Byproducts (Table M-7)	µg/L	Grab	Annually
Remaining General Physical and General Minerals (Table M-8)	--	Grab	Annually
Remaining Constituents with Notification Levels (Table M-9)	µg/L	Grab	Annually
Remaining Priority Pollutants (Table M-10)	µg/L	Grab	Annually

IV. REPORTING REQUIREMENTS

The Project Sponsors shall submit the required reports, outlined in this section to the State Water Resources Control Board's (State Water Board) Geotracker database and to the DDW, by the specified dates.

1. For the purpose of reporting compliance with numerical limitations, analytical data shall be reported using the following reporting protocols:
 - A. sample results greater than or equal to the MRL must be reported "as measured" by the laboratory (i.e., the measured chemical concentration in the sample); or
 - B. sample results less than the MRL, but greater than or equal to the laboratory's Minimum Detection Limit (MDL), shall be reported as "Detected, but Not Quantified", "DNQ." The laboratory shall write the estimated chemical concentration of the sample next to "DNQ;" or
 - C. sample results less than the laboratory's MDL shall be reported as "Not-Detected", or ND.

2. If the Project Sponsors sample and perform analyses on any sample more frequently than required in this MRP using approved analytical methods, the results of those analyses shall be included in the report. These results shall be reflected in the calculation of the average used in demonstrating compliance with average effluent, receiving water, etc., limitations.
3. The Regional Water Board or DDW may request supporting documentation, such as daily logs of operations.
4. All reports to the State Water Board's Geotracker shall reference the Compliance File No. CI-8654. Compliance monitoring reports shall be submitted separately from other technical reports.
5. All reports shall be submitted as a Portable Document Format (PDF) file and uploaded electronically to the State Water Board's Geotracker site for the Dominguez Gap Barrier Project. If the file exceeds 10 megabytes then the report shall be uploaded in multiple parts. Upon request the data shall be provided in excel format.
6. The Project Sponsors shall submit the required annual and 5-year reports as described in 22 CCR § 60320.228.
7. Monthly Reports
 - A. Monthly Monitoring Reports shall be received by the 15th day of the third month after the month of sampling.
 - B. Monthly reports shall contain the following at a minimum:
 1. Daily coliform analytical results for TIWRP's final effluent.
 2. Continuous turbidity analytical results for the month for TIWRP's final effluent including the daily average, daily maximum, and percent of time the turbidity exceeds 5 NTU.
 3. Summary of the monthly operational parameters for UV dose and free chlorine.
 4. Microfiltration effluent monitoring results for the month including the daily average and maximum, and the percent of time that the turbidity is greater than 0.2 NTU.
 5. The results of Membrane Integrity Testing (MIT) conducted during the month.
 6. The daily average and maximum conductivity readings for the RO effluent, the percent of time that the conductivity is greater than 350 micro-Siemens, and the minimum removal achieved.
 7. TOC results for the RO ~~effluent-influent~~ and effluent including the average and maximum, and the percent of time that the TOC is greater than 0.5 mg/L.
 8. Documentation that the necessary log removals have been achieved.
8. Quarterly Reports
 - A. Quarterly Monitoring Reports shall be received by the 15th day of the second month following the end of each quarterly monitoring period according to Table M-17.

TABLE M-17: QUARTERLY REPORT PERIODS AND DUE DATES

Reporting Period	Report Due
January – March	May 15
April – June	August 15
July – September	November 15
October – December	February 15

The contents of the Geotracker Quarterly Monitoring Report shall include a one page summary of operational concerns that addresses changes in reporting conditions, including influent, AWPf recycled water, and groundwater monitoring results since the last report.

- B. The Quarterly reports shall include, at a minimum, the following information:
1. Summary of monthly operational parameters for UV dose and free chlorine residual;
 2. Verification that the recycled water injected into the Barrier meets the requirements in 22 CCR [§ 60320.106](#): Wastewater Source Control;
 3. Volume of the influent, recycled water injected, and if used, potable water injected into the Barrier. If no recycled water was injected, or delivered for blending and injection, into the Barrier during the quarter/month, the report shall so state;
 4. Date and time of sampling and analyses;
 5. All analytical results of samples collected during the monitoring period of the influent, recycled water, groundwater, and if potable water was used, then of the blend of recycled water and potable water injected;
 6. Records of any operational problems, plant upset and equipment breakdowns or malfunctions, and any diversion(s) of off-specification recycled water and the location(s) of final disposal;
 7. Discussion of compliance, noncompliance, or violation of requirements;
 8. All corrective or preventive action(s) taken or planned with schedule of implementation, if any;
 9. Certification that no groundwater for drinking purposes has been pumped from wells within the boundary representing the greatest of the horizontal and vertical distances reflecting 6 months;
 10. Summary of operational concerns describing changes in reporting conditions, including influent, AWPf recycled water, and groundwater monitoring results, since the last report; and
 11. Monitoring results associated with the evaluation of pathogenic microorganism removal as described in this Order.

9. Annual Summary Reports

- A. The Annual Summary Report shall be received by April 15 of each year and shall contain a discussion of the previous calendar year's analytical results, as well as graphical and tabular summaries of the monitoring analytical data.
- B. Public water systems, owners of small water systems and other active production wells having down-gradient sources potentially affected by the Barrier or within 10 years groundwater travel time from the Barrier shall be notified by direct mail and/or electronic mail of the availability of the annual report.
- C. The Annual Summary Report shall include the following information at a minimum:
 1. The recycled water and diluent contribution injected into the Barrier each year;
 2. Documentation demonstrating the retention time underground and the distance from the nearest extraction well are being met;
 3. Tabular and graphical summaries of the monitoring data obtained during the previous calendar year including recycled water and groundwater quality data;
 4. A summary of compliance status with the applicable monitoring requirements during the previous calendar year;
 5. For any non-compliance during the previous calendar year, a description of:
 - i. The date, duration, and nature of the violation;
 - ii. A summary of any corrective actions and/or suspensions of subsurface application of recycled municipal wastewater resulting from a violation; and
 - iii. If uncorrected, a schedule for and summary of all remedial actions;
 6. Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells (and if applicable, in diluent water supplies);
 7. Information pertaining to the vertical and horizontal migration of the recharge water plume;
 8. Title 22 drinking water quality data for the nearest domestic water supply well (Cal Water 275-01);
 9. A description of any changes in the operation of any unit processes or facilities;
 10. An estimated quantity and quality of the recycled municipal wastewater and diluent water to be utilized for the next calendar year;
 11. A summary of the measures taken by the Project Sponsors to comply with wastewater source control program and the effectiveness of the implementation of the measures;
 12. A list of the analytical methods used for each test and associated laboratory quality assurance/quality control procedures shall be included. The report shall identify the laboratories used by the Project Sponsors to monitor compliance with this Order, their status of certification, and provide a summary of proficiency test;
 13. A list of current operating personnel, their responsibilities, and their corresponding grade of certification; and

14. A summary of monitoring reports, and reporting and trend analyses, to describe the changes in water quality and contrast them to background measurements for all constituents exceeding MCLs or where concentration trends increase after the addition of recycled water. Specifically describe studies or investigations made to identify the source, fate, and transport path of constituents which exceed the MCL at the monitoring wells.
 15. Results of any tracer studies performed throughout the year.
10. The Annual Summary Report shall be prepared by a properly qualified engineer registered and licensed in California and experienced in the field of wastewater treatment.
 11. The Project Sponsors shall conduct startup and commissioning testing that meets the requirement in 22 CCR § 60320.201: Advanced Treatment Criteria. A test protocol must be submitted to the Regional Water Board and DDW for approval prior to commencement of testing.
 12. Advanced Water Purification Facility (AWPF) Operation Optimization Plan: Prior to startup of the expanded AWPF, the Project Sponsors shall submit an updated Operations Optimization and Plan that meets the requirements set forth in 22 CCR § 60320.122 to DDW and the Regional Water Board for approval. At a minimum, the Operation Optimization Plan shall identify and describe the operations, maintenance, analytical methods, monitoring (grab and online) necessary to meet the requirements and the reporting of monitoring results. The Operation Optimization Plan shall include the following at a minimum:
 - A. The required monitoring and reporting for all waste streams at the AWPF;
 - B. Critical operational parameters to include routine testing procedures for the microfiltration (MF), reverse osmosis (RO), and the advanced oxidation process (AOP) systems, optimization of the UV dose for disinfection and reduction of light-sensitive contaminants, and all treatment processes, maintenance and calibration schedules for all monitoring equipment, process alarm set points, and response procedures for all alarms in each treatment process of the AWPF, including criteria for diverting recycled water if water quality requirements are not met, start-up, emergency response and contingency plans. During the first year of operation of the expanded AWPF, all treatment processes shall be operated in a manner to provide optimal reduction of microbial, regulated and unregulated contaminants. Based on this experience and anytime operational changes are made, the Operation Optimization Plan shall be updated.
 - C. The Operation Optimization Plan shall include staffing levels with applicable certification levels for Facility operations personnel. Significant changes in the operation of any of the treatment processes shall be reported to DDW and the Regional Water Board. Significant changes in the approved Operation Optimization Plan must be approved by DDW and the Regional Water Board prior to instituting changes. The Project Sponsors shall be responsible for ensuring that the Operation Optimization Plan is at all times representative of the current operations, maintenance, and monitoring of the AWPF.
 - D. The existing Operation Optimization Plan shall be updated to accurately reflect: the operations of the expanded AWPF, the date the plan was last reviewed, and whether the plan is valid and current.

13. Five-Year Engineering Report: Pursuant to 22 CCR § 60320.228, every five years from the date of initial approval of the engineering report required pursuant to 22 CCR § 60323, the Project Sponsors shall update the engineering report to address any project changes and submit the report to the Regional Water Board and DDW. The Five-Year Engineering Report Update shall include the following:

- A. A description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values. The groundwater flow and transport including the injection and extraction operations for the Barrier during the previous five calendar years shall be summarized. This summary shall also use the most current data for the evaluation of the transport of recycled water; such evaluations shall include, at a minimum, the following information:
1. The total quantity of water injected into each major aquifer, and the proportions of recycled water and diluent water that comprise the total quantity;
 2. Estimates of the rate and path of flow of the injected water within each major aquifer;
 3. Projections of the arrival time of the recycled water at the closest extraction well (Cal Water 275-01), and the percent of recycled water at the wellhead.
 4. Clear presentation on any assumptions and/or calculations used for determining the rates of flow and for projecting arrival times and dilution levels.
 5. A discussion of the underground retention time of recycled water, a numerical model, or other methods used to determine the recycled water contribution to each aquifer.
 6. A revised flow and transport model to match actual flow patterns observed within the aquifer if the flow paths have significantly changed.
 7. Revised estimates, if applicable, on hydrogeologic conditions including the retention time and the amount of the recycled water in the aquifers and at the nearest drinking water well at the end of that calendar year. The revised estimates shall be based upon actual data collected during that year on recharge rates (including recycled water, native water, and potable water), hydrostatic head values, groundwater production rates, basin storage changes, and any other data needed to revise the estimate of the retention time and the amount of the recycled water in the aquifers and at the nearest drinking water well. Significant differences, and the reasons for such differences, between the estimates presented in the approved 2015 Engineering Report and subsequently revised estimates, shall be clearly presented. The most recently available data shall be used to predict the retention time of recycled water in the subsurface. An estimate of hydrological conditions at small-system and other active production wells shall also be described.
 8. Evaluation of the ability of the Project Sponsors to comply with all regulations and provisions over the following five years.
 9. The Five-Year Engineering Report shall be prepared by a properly qualified engineer registered and licensed in California and experienced in the field of wastewater treatment.

V. CERTIFICATION STATEMENT

Each report shall contain the following declaration¹⁷:

"I certify under penalty of law that this document, including all attachments and supplemental information, was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment.

Executed on the _____ day of _____ at _____

_____ (Signature)

_____ (Title)"

Ordered by:

Samuel Unger, P.E.
Executive Officer

Date: October 13, 2016

/swebb

¹⁷

The Project Sponsors shall submit written documentation identifying the responsible party who certifies the perjury document.

ATTACHMENT A - STANDARD PROVISIONS

APPLICABLE TO WASTE DISCHARGE REQUIREMENTS

1. **DUTY TO COMPLY**

The Project Sponsors must comply with all conditions of these waste discharge requirements. A responsible party has been designated in the Order for this project, and is legally bound to maintain the monitoring program and permit. Violations may result in enforcement actions, including Regional Water Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Regional Water Board. [California Water Code (CWC) Sections 13261, 13263, 13265, 13268, 13300, 13301, 13304, 13340, 13350]. Failure to comply with any waste discharge requirement, monitoring and reporting requirement, or other order or prohibition issued, reissued or amended by the Los Angeles Water Board or State Water Resources Control Board is a violation of these waste discharge requirements and the Water Code, which can result in the imposition of civil liability. (California Water Code, Section 13350, subdivision (a).)

2. **GENERAL PROHIBITION**

Neither the treatment nor the discharge of waste shall create a pollution, contamination or nuisance, as defined by Section 13050 of the CWC. In addition, the discharge of waste classified as hazardous, as defined in California Code of Regulations, Title 23, Section 2521, subdivision (a) is also prohibited.

3. **AVAILABILITY**

A copy of these waste discharge requirements shall be maintained at the discharge facility and be available at all times to operating personnel. [CWC Section 13263].

4. **CHANGE IN OWNERSHIP**

The Project Sponsors must notify the Executive Officer, in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new project sponsor containing a specific date for the transfer of this Order's responsibility and coverage between the current project sponsor and the new project sponsor. This agreement shall include an acknowledgement that the existing project sponsor is liable for violation up to the transfer date and that the new project sponsor is liable from the transfer date forward. [CWC Sections 13267 and 13263].

5. **CHANGE IN DISCHARGE**

In the event of a material change in the character, location, or volume of a discharge, the Project Sponsors shall file with this Regional Water Board a new Report of Waste Discharge. [CWC Section 13260, subdivision (c)]. A material change includes, but is not limited to, the following:

- a. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.
- b. Significant change in disposal method, e.g., change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.

- c. Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems.
- d. Increase in flow beyond that specified in the waste discharge requirements.
- e. Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements. [CCR Title 23 Section 2210].

6. REVISION

These waste discharge requirements are subject to review and revision by the Regional Water Board. [CWC Section 13263].

7. NOTIFICATION

Where a project sponsor becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Regional Water Board, it shall promptly submit such facts or information. [CWC Sections 13260 and 13267].

8. VESTED RIGHTS

This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect a Project Sponsor from his liability under Federal, State or local laws, nor do they create a vested right for the Project Sponsors to continue the waste discharge. [CWC Section 13263, subdivision (g)].

9. SEVERABILITY

Provisions of these waste discharge requirements are severable. If any provision of these requirements is found invalid, the remainder of these requirements shall not be affected.

10. OPERATION AND MAINTENANCE

The Project Sponsors shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Project Sponsors to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Order. [CWC Section 13263, subdivision (f)].

11. HAZARDOUS RELEASES REQUIREMENT

Except for a discharge which is in compliance with these waste discharge requirements, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of

Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with Section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Water Board or the appropriate Regional Water Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of Section 13271 of the California Water Code unless the discharge is in violation of a prohibition in the applicable Water Quality Control plan. [CWC Section 13271, subdivision (a)].

12. OIL OR PETROLEUM RELEASES

Except for a discharge which is in compliance with these waste discharge requirements, any person who without regard to intent or negligence, causes or permits any oil or petroleum product to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any water of the State, shall, as soon as (a) such person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State oil spill contingency plan adopted pursuant to Article 3.5 (commencing with Section 8574.1) of Chapter 7 of Division 1 of Title 2 of the Government Code. This provision does not require reporting of any discharge of less than 42 gallons unless the discharge is also required to be reported pursuant to Section 311 of the Clean Water Act or the discharge is in violation of a prohibition in the applicable Water Quality Control Plan. [CWC Section 13272].

13. INVESTIGATIONS AND INSPECTION

The Project Sponsors shall allow the Regional Water Board, or an authorized representative upon the presentation of credentials and other documents as may be required by law, to:

- a. Enter upon a Project Sponsor's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;
- b. Have access to and copy at reasonable times, any records that must be kept under the conditions of this Order;
- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order, or as otherwise authorized by the California Water Code, any substances or parameters at any location. [CWC Section 13267].
- e. Except for material determined to be confidential in accordance with applicable law, all reports prepared in accordance with the terms of this Order shall be available for public inspection at the office of the Los Angeles Regional Water Board. Data on waste discharges, water quality, geology, and hydrogeology shall not be considered confidential.

14. MONITORING PROGRAM AND DEVICES

The Project Sponsors shall furnish, under penalty of perjury, technical monitoring program reports; such reports shall be submitted in accordance with specifications prepared by the Executive Officer, which specifications are subject to periodic revisions as may be warranted. [CWC Section 13267].

All monitoring instruments and devices used by the discharge to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices. Annually, the Project Sponsors shall submit to the Executive Officer a written statement, signed by a registered professional engineer, certifying that all flow measurement devices have been calibrated and will reliably achieve the accuracy required.

The analysis of any material required pursuant to Division 7 of the Water Code shall be performed by a laboratory that has accreditation or certification pursuant to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code. However, this requirement does not apply to field tests, such as test for color, odor, turbidity, pH, temperature, dissolved oxygen, conductivity, and disinfectant residual chlorine. (California Water Code, Section 13176).

Unless otherwise permitted by the Regional Water Board Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the State Water resources Control Board's Division of Drinking Water. All analyses shall be required to be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" [40 CFR Part 136] promulgated by the U.S. Environmental Protection Agency. [CCR Title 23, Section 2230]. The Quality Assurance-Quality Control Program must conform to the USEPA Guidelines "Laboratory Documentation Requirements for Data Validation", January 1990, USEPA Region 9) or procedures approved by the Los Angeles Regional Water Quality Control Board.

All quality assurance and quality control (QA/QC) analyses must be run on the same dates when samples were actually analyzed. All QA/QC data shall be reported, along with the sample results to which they apply, including the method, equipment, analytical detection and quantitation limits, the percent recovery, and explanation for any recovery that falls outside the QC limits, the results of equipment and method blanks, the results of spiked and surrogate samples, the frequency of quality control analysis, and the name and qualifications of the person(s) performing the analyses. Sample results shall be reported unadjusted for blank results or spike recoveries. In cases where contaminants are detected in QA/QC samples (e.g., field, trip, or lab blanks); the accompanying sample results shall be appropriately flagged.

The Project Sponsors shall make all QA/QC data available for inspection by Regional Board staff and submit the QA/QC documentation with its respective quarterly report. Proper chain of custody procedures must be followed and a copy of that documentation shall be submitted with the quarterly report.

15. TREATMENT FAILURE

In an enforcement action, it shall not be a defense for the Project Sponsors that it would have been necessary to halt or to reduce the permitted activity in order to maintain compliance with this Order. Upon reduction, loss, or failure of the treatment facility, the Project Sponsors shall, to the extent necessary to maintain compliance with this Order,

control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of the treatment facility fails, is reduced, or is lost. [CWC Section 13263, subdivision (f)].

16. DISCHARGE TO NAVIGABLE WATERS

Any person who discharges pollutants or proposes to discharge pollutants to navigable waters of the United States within the jurisdiction of this state or a person who discharges dredged or fill material or proposes to discharge dredged or fill material into navigable waters of the United States within the jurisdiction of this state shall file a report of waste discharge in compliance with the procedures set forth in Water Code section 13260. (California Water Code, Section 13376).

17. ENDANGERMENT TO HEALTH AND ENVIRONMENT

The Project Sponsors shall report any noncompliance which may endanger health or the environment. Any such information shall be provided verbally to the Executive Officer within 24 hours from the time the Project Sponsors become aware of the circumstances. A written submission shall also be provided within five days of the time the Project Sponsors become aware of the circumstances. The written submission shall contain a description and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours. The following occurrence(s) must be reported to the Executive Officer within 24 hours:

- a. Any bypass from any portion of the treatment facility;
- b. Any discharge of treated or untreated wastewater resulting from sewer line breaks, obstruction, surcharge or any other circumstances; and,
- c. Any treatment plant upset which causes the effluent limitation of this order to be exceeded. [CWC Sections 13263 and 13267].

18. MAINTENANCE OF RECORDS

The Project Sponsors shall retain records of all monitoring information including all calibration and maintenance records, all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Water Board Executive Officer.

Records of monitoring information shall include:

- a. The date, exact place, an time of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;

- e. The analytical techniques or method used; and
- f. The results of such analyses.

19. SIGNATORY REQUIREMENT

- a. All application reports or information to be submitted to the Executive Officer shall be signed and certified as follows:
 - i. For a corporation – by a principle executive officer or at least the level of vice president;
 - ii. For a partnership or sole proprietorship – by a general partner or the proprietor, respectively; and,
 - iii. For a municipality, state, federal or other public agency – by either a principal executive officer or ranking elected official.
- b. A duly authorized representative of a person designated in paragraph (a) of this provision may sign documents if:
 - i. The authorization is made in writing by a person described in paragraph (a) of this provision;
 - ii. The authorization specifies either an individual or position having responsibility for the overall operation of the regulated facility or activity; and,
 - iii. The written authorization is submitted to the Executive Officer.

Any person signing a document under this Section shall make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. [CWC Sections 13263, 13267, and 13268].”

20. OPERATOR CERTIFICATION

Supervisors and operators of municipal wastewater treatment plants and privately owned facilities regulated by the Public Utilities Commission (PUC), used in the treatment or reclamation of sewage and industrial waste shall possess a certificate of appropriate grade in accordance with California Code of Regulation, Title 23, Section 3680. State Water Boards may accept experience in lieu of qualification training (California Code of Regulations, Title 23, Sections 3680 and 3680.2). In lieu of a properly certified wastewater treatment plant operator, the State Water Board may approve use of water treatment plant operator of appropriate grade certified by the State Department of Public Health where reclamation is involved. (California Code of Regulations, Title, 23, Section 3670.1, subdivision (b).)

ADDITIONAL PROVISIONS APPLICABLE TO
PUBLICLY OWNED TREATMENT WORKS' ADEQUATE CAPACITY

21. Whenever a Regional Water Board finds that a publicly owned wastewater treatment plant will reach capacity within four years, the Board shall notify the Project Sponsors. Such notification shall inform the Project Sponsors that the regional board will consider adopting a time schedule order pursuant to Section 13300 of the Water Code or other enforcement order unless the Project Sponsors can demonstrate that adequate steps are being taken to address the capacity problem. The notification shall require the Project Sponsors to submit a technical report to the Regional Water Board within 120 days showing how flow volumes will be prevented from exceeding capacity, or how capacity will be increased. A copy of such notification shall be sent to appropriate local elected officials, local permitting agencies and the press. The time for filing the required technical report may be extended by the Regional Water Board. An extension of 30 days may be granted by the Executive Officer, and longer extensions may be granted by the Regional Water Board itself. [CCR Title 23, Section 2232].

REVISED TENTATIVE

ATTACHMENT B – DIVISION OF DRINKING WATER RECOMENDATION LETTER

REVISED TENTATIVE



EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Orig: OH
cc: CM
DS
SV

2015 DEC 28 PM 12: 22

State Water Resources Control Board
Division of Drinking Water

CALIFORNIA REGIONAL WATER
QUALITY CONTROL BOARD
LOS ANGELES REGION

December 18, 2015

Samuel Unger, Executive Officer
Regional Water Quality Control Board
Los Angeles Region
320 W. 4th Street, Suite 200
Los Angeles, CA 90013

Dear Mr. Unger

Terminal Island Indirect Reuse Replenishment Project Engineering Report

The State Water Resources Control Board, Division of Drinking Water (DDW), has reviewed *Amended Engineering Report for the Terminal Island Water Reclamation Plant Advanced Water Purification Facility Expansion: Dominguez Gap Barrier Project*, dated August 2015 (Title 22 Engineering Report). On November 3, 2015, a Public Hearing was held and no comments were received by the City of Los Angeles or DDW. DDW approves the August 2015 Title 22 Engineering Report and the DDW recommendation to the Los Angeles Regional Water Quality Control Board (RWQCB) is that an initial permit allowing the Terminal Island Project to operate the advanced treatment facility as described in the Engineering Report be issued. The proposed expansion project will be permitted by the RWQCB. DDW provides comments on the project for compliance with the Groundwater Replenishment Regulations.

DDW recommends the RWQCB insert the following conditions in the permit:

1. The Terminal Island Indirect Reuse Replenishment Project (TIIRRP) shall comply with Article 5.2 – Indirect Potable Reuse: Groundwater Replenishment – Subsurface Application, Sections 60320.200 through 60320.228 of the Title 22, California Code of Regulations.
2. The TIIRRP advanced water treatment facility (AWTF) shall conduct startup and commissioning testing that meets the requirement in §60320.201. Advanced Treatment Criteria. A test protocol must be submitted for approval prior to commencement of testing.
3. TIIRRP AWTF shall meet the requirements in §60320.122. Operation Optimization and Plan.
4. Per §60320.122. Operation Optimization Plan, prior to operation, TIIRRP shall submit an Operation Optimization Plan for review and approval. At a minimum, the Operation Optimization Plan shall identify and describe the operations, maintenance, analytical methods, monitoring (grab and online) necessary for the GRRP to meet the requirements and the reporting of monitoring results.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

1350 Front Street, Room 2050, San Diego, CA 92101 | www.waterboards.ca.gov

5. AWTP commissioning shall validate and confirm the actual setpoints for free chlorine and UV parameters, demonstrating that the advanced oxidation process (AOP) will provide no less than 0.5-log (69 percent) reduction of 1,4-dioxane..
6. TIIRRP shall follow what is described in the approved Operation Optimization Plan.
7. The TIIRRP Operation Optimization Plan shall, at all times, be representative of the current operations, maintenance, and monitoring of the GRRP.
8. TIIRRP AWTF shall provide continuous real-time monitoring and reporting of UV dose and free chlorine residual leaving the AOP.
9. TIIRRP must have alarms as stated in the approved Title 22 Engineering Report. Commissioning shall validate and confirm the actual setpoints and they shall be specified in the Operation Optimization Plan.
10. For reporting, TIIRRP AWTF shall submit to DDW a summary of monthly operational parameters for UV dose and free chlorine residual.
11. TIIRRP shall verify that the recycled municipal wastewater used for a GRRP meets the requirements in §60320.106. Wastewater Source Control.
12. Per §60320.108 (a) Pathogenic Microorganism Control (a), TIIRRP AWTF shall operate the GRRP such that the recycled municipal wastewater used as recharge water receives treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction, and 10-log Cryptosporidium oocyst reduction.
13. If a pathogen reduction in §60320.108 (a) is not met based on the on-going monitoring required pursuant to subsection (c), within 24 hours of being aware TIIRRP shall immediately investigate the cause and initiate corrective actions. TIIRRP shall immediately notify the DDW and Regional Board if the TIIRRP fails to meet the pathogen reduction criteria longer than 4 consecutive hours, or more than a total of 8 hours during any 7-day period. Failures of shorter duration shall be reported to the Regional Board by TIIRRP no later than 10 days after the month in which the failure occurred.
14. Per the approved Title 22 Engineering Report, an initial maximum Recycled Water Contribution (RWC) shall be 1.0.
15. The TIIRRP contains a multi-barrier treatment facility in order to comply with the Groundwater Replenishment Regulations. The following monitoring (grab and online) and reporting requirements will need to be included in the Operation Optimization Plan and reported to the DDW and the RWQCB monthly.
 - a. To demonstrate the log reduction credit given to the TIIRRP Wastewater Treatment Plant (WWTP) and facilities up to the influent of the AWTP, the WWTP effluent shall be monitored continuously for turbidity and daily for coliform concentrations. The TIIRRP shall report monthly to the DDW and RWQCB the daily WWTP effluent coliform analysis, the daily WWTP effluent average turbidity, daily WWTP effluent maximum turbidity and the percent of time the WWTP effluent turbidity is greater than 5 NTU.
 - b. The TIIRRP shall monitor and report the AWTP influent for turbidity continuously, TOC and total coliform weekly. If a sample of the influent to the AWTP is positive for total coliform, the sample shall be analyzed for *E.coli*. Turbidity measurements shall be recorded every 15 minutes and the daily average and daily maximum shall be reported.

- c. The micro filtration membrane (MF) effluent shall be monitored for turbidity continuously. The daily average and maximum turbidity reading and the percent of time that the turbidity is greater than 0.2 NTU needs to be reported.
- d. Membrane integrity testing (MIT) shall be performed on each of the MF membrane units, a minimum of once every 24 hours of operation.
 - i. The log removal value (LRV) for Cryptosporidium shall be calculated and the value reported after the completion of each MIT.
 - ii. The MIT shall have a resolution that is responsive to an integrity breach on the order of 3 μm or less.
 - iii. Calculations of the LRV shall be based on a pressure decay rate (PDR) value with an ending pressure that provides a resolution of 3 μm or less.
 - iv. The MIT shall have a sensitivity to verify a LRV equal to or greater than 4.0.
- e. The Reverse Osmosis (RO) system shall be credited pathogen reduction at this facility in accordance with the amount demonstrated via online monitoring to ensure the integrity of the RO system. TIIRRP AWTF must monitor the effluent of each RO train (including each stage) continuously for conductivity. The daily average and maximum conductivity reading, and the percent of time that the conductivity is greater than 350 micro-Siemens must be reported. The TIIRRP AWTF shall calculate the minimum removal achieved.
- f. The RO effluent will be monitored for TOC via grab sample weekly and reported in the monthly report. The RO influent and effluent will be monitored for TOC online and reported in the monthly report. The daily average and maximum TOC reading and the percent of time that the TOC is greater than 0.5 mg/L must be reported.
- g. In accordance with the Recycled Water Policy, NDMA and Sucralose are performance surrogates for RO and shall be analyzed quarterly both prior to the RO and after RO prior to the AOP.
- h. The UV/peroxide system shall be operated, as has been designed, to meet the groundwater recharge regulations, providing a minimum 0.5-log reduction of 1,4-dioxane. The UV system is a Wedeco K reactor, which was pilot-tested. Based upon this testing, the UV dose was expected to be 920 mJ/cm² or higher. AOP commissioning will validate and confirm the actual setpoints for free chlorine and UV parameters
- i. The UV system must be operated with online monitoring and built-in automatic reliability features that must trigger automatic diversion of effluent to waste by the following critical alarm setpoints.
 - i. UV dose less than 920 mJ/cm², or a new setpoint approved by DDW after the AOP commissioning.
 - ii. UV transmittance less than 95%
 - iii. complete UV reactor failure
 - iv. Free chlorine residual less than 2.0 mg/L, or a new setpoint approved by DDW after the AOP commissioning.
- j. On-line monitoring of pH, free chlorine residual, UV dose, UV intensity, flow, and UV transmittance, must be provided at all times. Flow meters, pH meters, free

December 18, 2015

chlorine residual analyzers, UV intensity sensors, and UV transmittance monitors must be properly calibrated.

- k. At least monthly, all duty UV intensity sensors must be checked for calibration against a reference UV intensity sensor.
- l. The UV transmittance meter must be inspected and checked against a reference bench-top unit weekly to document accuracy.
- m. The monitoring and reliability features, including automatic shutdown capability, shall be demonstrated to DDW during a plant inspection prior to final approval.
- n. Based on the calculation of log reduction achieved daily by the entire treatment facility, from the WWTP to the public water supply wells, the TIIRRP will report a "Yes" or "No" for each day as to whether the necessary log reductions (12-logs virus, 10-logs for Giardia and Cryptosporidium) have been achieved. An overall log reduction calculation will be provided only for those days when a portion of the treatment facility does not achieve the necessary log reductions.
- o. TIIRRP shall sample the monitoring wells as specified in the approved Operation Optimization Plan. TIIRRP shall take these samples monthly for the first year of operation. TIIRRP may request, from DDW, a reduction in this monitoring after the first year.

16. The TIIRRP shall submit the required annual and five-year reports per Section 60320.228.

Should you have any questions regarding the content of this letter, please feel free to contact me at (brian.bernados@waterboards.ca.gov; 619.525.4497) or Randy Barnard (randy.barnard@waterboards.ca.gov; 619.525.4022).

Sincerely,



Brian Bernados, P.E.
Technical Specialist

Cc Kurt Souza, Chief, Southern California Section

Mark A. Starr, TIWRP Manager
City of Los Angeles, Bureau of Sanitation
Mark.starr@lacity.org