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May 15, 2014

Mr. Samuel Unger, Executive Officer  
California Regional Water Quality Control Board  
Los Angeles Region  
320 West 4<sup>th</sup> Street, Suite 200  
Los Angeles, CA 90013  
*[via email and Geotracker]*

**Subject: Comments on Revised Tentative Waste Discharge and Water Recycling Requirements (WDRs/WRRs) for Leo J. Vander Lans Water Treatment Facility and Alamitos Barrier Recycled Water Project (Order No. R4-2014-xxx, CI-8956)**

Dear Mr. Unger:

The Water Replenishment District of Southern California (the District) appreciates the opportunity to provide comments on the Revised Tentative Waste Discharge and Water Recycling Requirements Permit (Revised Tentative Permit) for the Alamitos Barrier Recycled Water Project (Project), dated April 14, 2014. The District has several comments regarding the Permit, which are detailed below.

We would like to take this opportunity to thank you and Los Angeles Regional Water Quality Control Board (Regional Water Board) staff for meeting with me and my staff on April 18<sup>th</sup>, May 2<sup>nd</sup> and May 12<sup>th</sup>, 2014, at the Regional Water Board office and discussing our concerns regarding the Revised Tentative Permit. We greatly appreciate the fact that, during the May 12<sup>th</sup> meeting, the Regional Water Board staff agreed to make changes to the Revised Tentative Permit to address our concerns, per our summary of talking points (Attachment B) and the red-lined edits (Attachment C) that were shared with your team on April 18<sup>th</sup> and May 12<sup>th</sup>, respectively.

The District requests that the Regional Water Board modify the Revised Tentative Permit based on the requests contained herein and the Attachments (A through D and 1 through 9.1). As requested, the District's comments are compiled in a tabular format in Attachment A, with supporting information and details included in the remaining attachments. Attachments D and 1 through 9.1 are being provided to add further clarity to the issues outlined in Attachment A but do not contain additional recommendations for changes or edits to the Revised Tentative Permit. The requested modifications are fully protective of receiving groundwater and avoid any future potential confusion with regards to implementing and enforcing the requirements of the Permit.

General Comments

On April 11, 2014, the Los Angeles Regional Water Quality Control Board issued a press release regarding its April 10<sup>th</sup>, 2014 adoption of a permit amendment for the District's Montebello Forebay Groundwater Recharge Project. The Board's commendable action, which allowed an increase in the percentage of recycled water that may be used at the Spreading Grounds from 35 percent to 45 percent of the total recharge water, was lauded as "...the kind of smart and prudent action that will help us get through this challenging drought and inevitable drought to come" by State Water

Resources Control Board (State Water Board) Chair Felicia Marcus, who serves on the Governor's Drought Task Force. Furthermore, the press release quoted Charles Stringer, Chair of the Regional Water Board, as saying, "The Regional Board is committed to ensuring that every drop of our precious water resource is efficiently used. Water Resources are stressed throughout the state due to the drought. The amendment is an important and common sense action for ensuring the availability of local water supplies for the future."

As you know, the expansion of advanced treated recycled water production at Leo J. Vander Lans Advanced Water Treatment Facility (LVLAWTF) for injection at the Alamitos Barrier, which the Revised Tentative Permit proposes to regulate, is a timely solution to help drought-proof the region's water supply. The District believes that the expansion is fully aligned with and supportive of the goals and directives contained in the State Water Board's Recycled Water Policy and its amendment and the governor's January 2014 drought declaration.

The District, however, feels that the Revised Tentative Permit appears incongruent with the Regional Water Board's recent commitment to promote recycled water use to ensure local water supply sustainability in that it proposes terms that have a significant potential to adversely impact the use of recycled water for groundwater recharge, especially when a drought has been recently declared by the Governor. For example, the Revised Tentative Permit introduces many new unnecessary requirements and unwarranted unfavorable depictions of the Project, in a manner contrary to the existing Permit (Order No. R4-2005-0061).

To WRD, the overarching tone of the Revised Tentative Permit is that it treats the Project as a disposal of waste rather than as a beneficial reuse of recycled water. Detailed examples and recommended changes are contained in Attachment B. The District feels that this treatment conflicts with a variety of State laws and policies that recognize the distinction between "waste" disposal and beneficial use of "recycled water," and therefore should be modified accordingly (See, e.g., State Water Board Resolution 77-1, which finds that: "The California Legislature has declared that the people of the State have a primary interest in the development of facilities to **reclaim water containing waste to supplement existing surface and underground water supplies**"; the State Water Board's Recycled Water Policy that declares that "when used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and **strongly supports recycled water as a safe alternative to potable water** for such approved uses"; see *also* Water Code sections 13510, 13512, and 13560). (emphasis added)

Of major concern is the tone of some of the findings of the Revised Tentative Permit that the District has degraded water quality through the Project and therefore new requirements are necessary to prevent further degradation. The specific findings of concern include information that is lacking detail, and is over generalized or non-factual, and projects the impression that the current Project and the expansion have or will have a detrimental impact on groundwater, which is incompatible with the Project's water quality monitoring results, which have been submitted to the Regional Water Board and California Department of Public Health (CDPH). As is customary for the Regional Water Board when renewing existing water quality permits, the District requests that the Revised Tentative Permit be based on the monitoring data from the most recent five years (i.e., 2009 through 2013), as older data (pre-2009 Spring) do not reflect important operational enhancements or repairs the LVLAWTF has undergone. Equally disconcerting are a number of technically unsupported requirements based on the use of incomplete or partial information. Such information should be deleted or appropriately revised. Specific examples and recommended changes are included in Attachment B.

Furthermore, the District is concerned that the Revised Tentative Permit contains redundant, enforceable requirements that are unnecessary and create dual liability, as well as provisions that are not consistent with the July 2013 CDPH Conditions, the June 2013 Draft Groundwater Replenishment Regulations, and State's Anti-degradation Policy (Resolution 68-16), as detailed in Attachment B. The Revised Tentative Permit findings and requirements should be streamlined and modified to accurately reflect the existing policies and regulations.

The District thanks you in advance for your careful consideration of these comments. In light of the current drought, appropriate and timely support from the Regional Water Board to allow the LVLWTF expansion to move forward on schedule, and without unnecessary regulatory burdens, is of paramount importance to the District and to the 4 million residents in the WRD service area that rely on groundwater as a major source of water. The Project is an important component of WRD's efforts to become completely independent of water imported from the Bay Delta and the Colorado River to replenish the groundwater supplies for the 4 million residents within the WRD service area. This Project will produce additional advanced treated recycled water that will eliminate the need for five million gallons a day of imported water that would otherwise be used in the Alamitos Barrier. We urge you to follow the examples of the existing Permit and the other permits issued by this Regional Water Board to local seawater intrusion barrier projects, all of which elegantly laid out the requirements for recycled water use for groundwater recharge, without superfluous requirements.

If you have any questions concerning this letter or need additional clarification, please contact Dr. Cathy Chang, Water Quality Program Manager at (562) 275-4245 or at [cchang@wrdd.org](mailto:cchang@wrdd.org).

Very truly yours,



Robb Whitaker, PE  
General Manager

Attachments

cc: [via email only]

Deborah Smith, Los Angeles Regional Water Quality Control Board  
David Hung, Los Angeles Regional Water Quality Control Board  
Cris Morris, Los Angeles Regional Water Quality Control Board  
Cindy Forbes, California Department of Public Health  
Kurt Souza, California Department of Public Health  
Adam Walden, Los Angeles County Department of Public Works  
Tai Tseng, Long Beach Water Department  
Ann Heil, Los Angeles County Sanitation Districts  
Uzi Daniel, West Basin Municipal Water District  
Roshanak Aflaki, City of Los Angeles Bureau of Sanitation  
Katherine Rubin, Los Angeles Department of Water and Power  
Reymundo Trejo, Upper San Gabriel Valley Municipal Water District  
Jason Dadakis, Orange County Water District  
Dave Smith, WaterReuse California

## List of Attachments

Attachment #	Topic
<b>A</b>	Table of Comments on April 14, 2014 Revised Tentative Order for Alamitos Barrier Recycled Water Project
<b>B</b>	May 2, 2014 Talking Points
<b>C</b>	May 15, 2014 Redlined Word Document of April 14, 2014 Revised Tentative Order for Alamitos Barrier Recycled Water Project (includes comments and recommended text edits; any changes to the text edits from the May 2, 2014 Redlined Word document are shown in gray highlights.)
<b>D</b>	Comparison of 2005 Draft Groundwater Recharge with Recycled Water Regulations (GWRR) and June 2013 Proposed GWRR (related to Finding 32)
<b>1</b>	Supporting Information for Talking Point # 9 (Permit Treats Project As Disposal of Waste Versus Beneficial Reuse of Recycled Water)
<b>2</b>	July 12, 2013 CDPH Findings of Fact and Conditions (Supporting Information for Talking Point #6 – Inconsistent with CDPH Findings of Fact & Conditions)
<b>3</b>	Supporting Information for Talking Point # 8 (Repetitive Permit Requirements That Should Be Streamlined)
<b>4</b>	Supporting Information for Talking Point # 4 (Project Mischaracterization / Unfavorable Depiction of Project)
<b>5</b>	Supporting Information for Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting)
<b>6</b>	Inconsistency with Recycled Water Policy (related to Finding 28)
<b>7 and 7.1</b>	Supporting Information for Talking Points #5 (Technically Unsupported Requirements) and #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations); Information on Nitrogen.
<b>8</b>	Information Regarding NDMA (related to Finding 41)
<b>9</b>	Supporting Information for Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) – Pathogen Control
<b>9.1</b>	CDPH's presentation on California's Draft Criteria for Groundwater Recharge with Recycled Water (from December 2011 Stakeholder Meeting)

# **ATTACHMENT A**

## Attachment A

### Comments on Revised Tentative Waste Discharge and Water Recycling Requirements for Leo J. Vander Lans Water Treatment Facility and Alamitos Barrier Recycled Water Project (Order No. R4-2014-xxx, CI-8956)

[See Attachment B (May 2, 2014 Talking Points) and Attachment C (May 15, 2014 Redline Word Document of April 14, 2014 Revised Tentative Order; includes comments and recommended text edits<sup>1</sup>)]

Order Section	Page No. Redline (See Attachment C)	Redline Comment # in Word Document	WRD Comments
Title of Order (WDR)	1	1	(Note: Any changes from May 2, 2014 Redlined Tentative Order provided to the Regional Water Board are shown in gray or yellow highlights; placeholders mentioned in the comments included in the May 2 <sup>nd</sup> Redline Tentative Order are replaced by specific numeric numbered attachments) Per Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water), WRD requests that the permit be issued only as Water Recycling Requirement to recognize the advance treated recycled water is not a waste. <b>Additional comments are Provided in Attachment 1.</b>
<b>Findings</b>			
I.3	2	2	Important factual information from the 2013 approved Engineering Report, which is hereby incorporated by reference; see <a href="http://www.wrd.org/engineering/reports/LVLWTF_Engineering_Report_Revised_Final_With_Appendices.pdf">http://www.wrd.org/engineering/reports/LVLWTF_Engineering_Report_Revised_Final_With_Appendices.pdf</a> .
1.5	2	3	Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) - the terminology used is not consistent with CDPH Findings of Fact and Conditions; <b>please refer to Attachment 2, the cover letter and CDPH Findings of Fact and Conditions.</b>
1.6	2	4	The City of Long Beach only has the rights to recycled water from the Long Beach WRP.
II.7	2	5	Recognizes the recent amendment - Order No. R4-2005-0061-A01 issued by the Regional Water Board on March 6, 2014.
II.10	3	6	Added to clarify the location of the hearing and that it was in proximity to the Project.
II.10	3	7	Inserted per Water Code section 13540 and CDPH's requirement to make a finding regarding degradation of groundwater quality as a source of domestic water supply.
II.11	3	8	No need to state. Our comments in this document endeavor to reduce the repetition and provide clarity.
III.13.b	3	9	To be consistent with terminology in III.13.a.
III. 13.a and 13.b	3	10	Factual correction: The production of recycled water is regulated under the 1997 Master Reclamation Permits for the WRPs. The discharge of wastewater to surface water is regulated under the two NPDES permits, and thus not applicable to the production of recycled water.  This comment is supported by language in the NPDES permits. <b>Order R4-2007-0047</b> distinguishes the production of recycled water as follows:  <b>"B. Reclamation Specifications – Discharge Point 001</b> 1. The production, distribution, and reuse of recycled water are presently regulated under Water

<sup>1</sup> Any changes to the text edits from the May 2, 2014 Redlined Word document are shown in gray highlights.

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			<p>Reclamation Requirements (WRRs) Order No. 87-47, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page 16.</p> <p><b>"VI. RECLAMATION MONITORING REQUIREMENTS</b></p> <p>The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRRs Order No. 87-47, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page E-18.</p> <p>For Order <b>R4-2007-48</b>, the production of recycled water is described as follows:</p> <p><b>"B. Reclamation Specifications</b></p> <p>1. The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRR) Order No. 87-51, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page 15.</p> <p><b>" VI. RECLAMATION MONITORING REQUIREMENTS</b></p> <p>The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRR) Order No. 87-51, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page E-18.</p>
III.15	4	11	<p>Talking Point # 8 (Repetitive Permit Requirements That Should Be Streamlined) and Talking Point # #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) - Duplicative and somewhat inaccurate representation of CDPH Condition #9 on page 15 of Attachment 2; per CDPH Condition #9, WRD is required to calculate a monthly RWC under all operating conditions. This Condition does not belong in a permit finding section. <b>Additional comments regarding Talking Point # 6 are provided in Attachment 2; Additional comments regarding Talking Point #8 are provided in Attachment 3.</b></p>
III.15	4	12	<p>Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), this statement is factually inaccurate. The inclusion of treatment enhancements is not to "maintain" the quality of the injected water, but to comply with the latest changes to the Draft Groundwater Replenishment Regulations. These requirements are intended to improve water quality by oxidizing constituents that are not well removed by RO. See CDPH Finding #7 on page 3 and Finding #10, on page 6 regarding AOP in Attachment 2. Suggest rewording as shown.</p>

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III.16	4-5	13	Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), this statement is not factually correct. The current AWTF does not provide advanced oxidation, only UV. As part of the expansion, and to be evaluated during start-up, WRD will add hydrogen peroxide upstream of UV so the treatment system provides advanced oxidation. This change is consistent with the findings in Amendment R4-2005-0061-A01. Suggest rewording entire paragraph as shown.
IV.20	7	14	This is a permit condition and does not belong in the permit finding section.
V.21	8	15	This clarifies which report is being referenced.
V.23	8	16	Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), suggested wording provides factual and unbiased information on groundwater quality and effects of recycled water on SB-LEI. <b>Additional comments are Provided in Attachment 4.</b>
V.24	8-9	17	Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project). As originally presented, this paragraph and Table 1 implied the Project had negatively impacted groundwater. In fact, groundwater data do not suggest the Project has increased background concentrations for these select compounds. <b>Additional comments are Provided in Attachment 4.</b>
V.24, Table 1, Footnotes 1 and 2	9	18	Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), recommend deleting this table as currently constructed as there is no basis for any increases due to Project. <b>Additional comments are Provided in Attachment 4.</b>
V.25	9-10	19	Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), changes recommended. <b>Additional comments are Provided in Attachment 4.</b>
VI.26	10	20	Finding 26 and Footnote 2: Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting). <b>Comments are Provided in Attachment 5.</b>
VI. 27	10	21	Per Talking Point #9 (Permit Treats Project As Disposal of Waste Versus Beneficial Use of Recycled Water); this is not a waste after treatment. <b>Comments are Provided in Attachment 1.</b>
VI.28	11	22	Inconsistent with Recycled Water Policy. To be consistent with the Policy, the finding should also include language that the Project will not cause dissolution of chemicals nor impact to contaminant plumes as identified in the Engineering Report. <b>Comments are Provided in Attachment 6.</b>
VI.29	11-12	23	Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting). <b>Comments are Provided in Attachment 5.</b>
VI.30	12	24	Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting). <b>Comments are Provided in Attachment 5.</b>
VI.32	12	25	For a comparison of the 2013 Draft Regulations and the Regulations in effect when the 2005 Order was adopted, <b>please refer to Attachment D.</b>
VI.32	12	26	Edited for factual information: This finding does not acknowledge that Section 60320 of Title 22 includes requirements for Groundwater Recharge projects, which were used by CDPH to approve the Project (see cover letter from CDPH to Sam Unger, dated July 12, 2013). In addition, Senate Bill 104 amends the Water code by adding Section 13562.5 that requires CDPH to adopt the groundwater replenishment regulations by June 30, 2014 as emergency regulations without review by the Office of

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			Administrative Law ( <b>see comments in Attachment 6</b> ). The last sentence in this finding seems out of place in that there are numerous requirements in the June 2013 Draft Groundwater Replenishment Regulations. The CDPH Findings make note of numerous provisions in the Draft Groundwater Replenishment Regulations including source control, the Operations Plan, pathogen control, response retention time, calculation of RWC, etc.
VII.34	13	27	Talking Point #8 (Repetitive Permit Requirements). This Finding establishes that secondary MCLs will be used to interpret the narrative Basin Plan objective, yet in the permit provisions, there are repetitive requirements for narrative secondary MCLs <u>and</u> the narrative Basin Plan objective. If secondary MCLs are not to be used to interpret the narrative objective, this Finding <b>must be modified accordingly.</b> <b>Comments regarding repetitive permit requirements are Provided in Attachment 3.</b>
VII.37	13	28	The purpose of this Section VII is to catalog applicable plans, policies and regulations. It is not to discuss the Order. It should be noted that compliance with some MCLs can be determined in locations other than the injected water. We suggest deleting the final sentence.  Consistent with other permits, we recommend that a finding be included to address the State Water Board's Sources of Drinking Water Policy. <b><i>We recommend adding a finding here for that policy using the following language:</i></b>  <u>"The Sources of Drinking Water Policy (Resolution No. 88-63) provides that all waters of the state, with certain exceptions are to be protected as existing or potential sources of municipal and domestic supply. Exceptions include waters with existing high dissolved solids (i.e., greater than 3,000 mg/L), low sustainable yield (less than 200 gallons per day for a single well), waters with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices, waters within particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal groundwaters."</u>
VII.38	13-14	29	Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). The advanced treated water is not a waste and therefore it is not appropriate to have this paragraph here.
VII.39	14	30	Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). Per "  Effluent" imparts a negative tone to the advanced treated recycled water. There is no authority to impose effluent limitations for a recycled water / groundwater recharge project in the Water Code. Effluent limitations are a NPDES term. To promote a positive tone to this high quality manufactured water, do not use "Effluent Limitations". We propose "Recycled Water Treatment Specifications" or "Recycled Water Discharge Specifications". Note: Placeholder for additional comments to be submitted for 30-day comment period regarding each talking point. <b>Additional comments regarding Talking Point #4 are provided in Attachment 1.</b>

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VII.40, Footnote s 4 and 5	14-15	31	Reworded for more accuracy and to help support the reason for going to the 10 mg/L nitrogen limit – consistent with CDPH Condition #9 and no significant impact on basin nitrates based on modeling even if 10 mg/L were continually injected, which will not happen. <b>Additional comments are provided in Attachments 7 and 7.1.</b>
VII.41	15	32	Language is not accurate. <b>Additional comments are provided in Attachment 8 regarding Health and Safety Code provisions for Notification Levels and Response Levels, and the designation of NDMA as a carcinogen.</b>
VII.41	15	33	Per Talking Point #4 (Unfavorable Depiction of the Project). This excursion was 6 years ago and WRD stopped the Facility to correct the condition. Since then, the Project has operated favorably. The expanded Facility incorporates AOP, which provides an additional barrier for reduction of NDMA. We recommend using only the last 5 years (2009-2013) of water quality data which is customary when renewing permits.
VII.41	15	34	Talking Point #4 (Unfavorable Depiction of the Project). No reason for this sentence and implies a negative tone towards the Project. Following all conditions of the Permit will ensure the Project is safe and protects groundwater. This finding also ignores information in the Engineering Report (see page 7-5) that shows the change in NDMA in groundwater was temporal ( <b>also see comments in Attachment 4</b> ).
VII.44	16	35	The revisions suggested here are consistent with Talking Point # 3 (Inconsistent with Anti-degradation Policy).
<b>Order</b>			
I.1	18	36	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #8 that could <b>unreasonably lead to multiple exceedances</b> for same issue and should be deleted.
I.2	18-19	37	This requirement is new and was not part of the existing 2005 permit. Removal recommended, per Talking point #5 (Technically Unsupported Requirements) since the influent criteria were not exceeded under the existing permit.
1.2.a and b	19	38	The 15 mg/L BOD and TSS conditions listed have no regulatory basis as applied to treatment for water reclamation. Neither the Water Code, Title 22, nor the CDPH Draft Groundwater Replenishment Regulations require their imposition, and the values cited do not correlate to any prescribed definition of adequate oxidation. Metcalf & Eddy reports that BOD and TSS following activated sludge treatment with nitrification can be 25 mg/L for each parameter. [Metcalf & Eddy, 2007, <i>Water reuse issues, technologies, and applications</i> . New York, NY: McGraw Hill.] Orders adopted by the Regional Water Board not supported by the findings, or findings not supported by the evidence, constitute an abuse of discretion. <i>Topanga Association for a Scenic Community v. County of Los Angeles</i> , 11 Cal.3d 506, 515; <i>California Edison v. SWRCB</i> , 116 Cal. App.3d 751, 761 (4th Dt. 1981); <i>see also In the Matter of the Petition of City and County of San Francisco, et al.</i> , State Board Order No. WQ-95-4 at page 10 (Sept. 21, 1995). Furthermore, imposition of unreasonable, unsupported, and/or unnecessary BOD and TSS limitations unfairly places the District in a difficult enforcement position, as a minor exceedance of these values may result in a technical violation or administrative action, but not result in, or represent, any problematic

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			<p>water quality condition. Such outcomes should be avoided. (See Water Code §13000)</p> <p>Further, the requirements are even inconsistent with (and more stringent than) the discharge limits for the Long Beach and Los Coyotes WRPs NPDES permits that supply the source water for recycled water generation; in those permits, the monthly BOD limit is 20 mg/L and the monthly TSS limit is 15 mg/L. Those discharge limitations are already more stringent than federally mandated technology-based limits for discharges to surface waters (40 CFR Part 133) and represent conditions beyond what is considered to be "adequately oxidized."</p>
II.1	19	39	Talking Point #8 (Repetitive Permit Requirements) that could unreasonably lead to multiple exceedances for same issue. Since the CDPH FOF and Conditions are attached and enforceable, provisions 2-5 are not necessary - they correspond to CDPH Conditions #3, #16, and #4.
II.4	19	40	Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations). Note, 4.a, b, c, and d are conditions for new membranes and not an ongoing requirement.
II.5 and Table 6	19-20	41	Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) for pathogen control. <b>Additional comments are provided in Attachment 9.</b>
III	20	42	Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). There is no authority to impose effluent limitations for a recycled water / groundwater recharge project in the Water Code. Effluent limitations are a NPDES term. To not imply a negative tone to project related to wastewater, do not use "Effluent Limitations".
III.1 Table 7	20	43	<b>Justification for averaging period for Basin Plan groundwater objectives.</b> The Los Angeles Basin Plan does not include averaging periods for groundwater objectives for these constituents. If the daily maximum averaging period is applied, the Regional Water Board must provide justification as to why a daily maximum averaging period is technically and scientifically valid for these constituents in groundwater rather than a longer averaging period. The basis of the objectives was ambient groundwater conditions at the time the Basin Plan was developed. The basis of the objective was an average of available data at the time the objective was adopted. That approach supports a permit averaging period longer than a daily maximum to correspond to the derivation of the objective. Because the SNMPs are using annual averages for the analyses, and based on the approach used to derive the objectives, we recommend that the daily maximum averaging period be revised to an annual average.
III.1 Table 7	20	44	Per Talking Point #8 (Repetitive Permit Requirements), this repeats CDPH Conditions #1 (Flow) and TOC (#15) that could unreasonably lead to multiple exceedances for same issue and should be deleted.
III.1 Table 7	20	45	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 that could unreasonably lead to multiple permit exceedances for the same issue, and should be deleted. Repetition of the same enforceable requirement could lead to overly aggressive enforcement and artificially elevated penalties. The District understands the Regional Water Board's desire to include the parameters in the

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			table because they also are Basin Plan groundwater objectives; however, those objectives simply incorporated by referenced the MCLs that are already applied to the project via the CDPH Conditions.
III.1 Table 7, Footnote 6	20	46	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #6 that could unreasonably lead to multiple exceedances for same issue and should be deleted. Also Talking Point #6 (Inconsistent with CDPH Regulations). Pathogen log reductions for virus are also achieved through retention time underground and therefore cannot be measured at the discharge point. <b>Additional comments are provided in Attachment 9.</b> CDPH Condition #6 establishes the approach. The Operations Plan will include the monitoring elements to evaluate log reductions in accordance with Section 13.8 of the Engineering Report. Per CDPH requirements, the information on achieving the pathogen reductions must be provided to CDPH on a monthly basis, and will be provided as well to the Regional Water Board. Plus cannot accept TBDs in permit. Delete from this table.
III.2	20-21	47	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #18 that could unreasonably lead to multiple exceedances for same issue and should be deleted.
III.3	21	48	Based on requested delayed effective date of the Order, this provision is not necessary and should be deleted with regard to the startup testing. Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 regarding pH during full-scale operations that could unreasonably lead to multiple exceedances for same issue and should be deleted. Also, please note that the Regional Water Board's Basin Plan does not contain a numeric pH objective for groundwater. If the pH limit were to stay, we recommend a slightly expanded range (i.e., 6 to 9), based on the experiences of other comparable advanced water treatment facilities that have undergone similar expansions, where the pH of the final recycled water has been shown to fluctuate up to 9 while the treatment processes were being fine-tuned and optimized, which was true especially during the first year of operation. Note that Orange County Water District's barrier permit (Order No. R8-2004-0002 for Interim Water Factory 21 and GWRS) contains a pH limit for recycled water of 6 to 9 pH units.
III.3	21	49	Change recommended, per Talking Point #8 (Inconsistent with Previous Approvals) - see Amendment R4-2005-0061-A01.
III.3	21	50	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 that could unreasonably lead to multiple exceedances for same issue and should be deleted.
III.4	21-22	51	This is not a discharge specification or limit so does not belong in Section III. If desired to keep in, <b>should move up to Findings with some additional edits as shown in Attachment 7.</b>
III.4	22	52	Talking Point #5 (Technically Unsupported Requirements). <b>Additional comments are provided in Attachment 7.</b>
III.5	22	53	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 regarding MCLs (including secondary MCLs) that could unreasonably lead to multiple exceedances for same issue and should be deleted. Finding 34 explains that this narrative Basin Plan objective is being translated to secondary MCLs. See earlier comment about Finding 34.
III.6	22	54	Per Talking Point #9 (Permit Treats Project As Disposal of Waste Versus Beneficial Reuse of Recycled Water).

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IV.1	22-23	55	Delete IV.1 of this section. Per Talking Point #4 (Unfavorable Depiction of Project), reflects unwarranted negative tone on project based one excursion of NDMA back in 2008. Since then, recycled water has consistently been below the Notification Level (except for one isolated and minimal event that occurred during the first quarter 2013 at 17 ng/L) demonstrating successful treatment at the plant. Advanced oxidation will also provide an additional treatment barrier for NDMA removal. Conditions of Successful Treatment will be demonstrated by meeting all conditions of the permit, not just of this section. Monitoring and compliance for NDMA is already in Monitoring Section IV - 5 and should not be repeated in this part of the permit. <b>Additional Comments are provided in Attachment 4.</b>
IV.1	23	56	Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #19.
IV.1	23	57	These are monitoring requirements and do not belong under the limitations section. Recommend removal, as they are repeated under the MRP section IV.5.
VI.2	24	58	Since the treatment plant expansion will not be completed until Fall 2014 and startup testing is ongoing, WRD requests that the effective date of the permit be <b>October 1, 2014</b> rather than upon adoption of this Order. This will allow a coordinated transition for implementation of the new provisions in the Order (for example full-scale AOP will not be in place until after construction and startup are completed), including the monitoring provisions. Based on our request for a delayed effective date, there is no need for this provision in the Order. If the Regional Water Board refuses to revise the effective date, then a provision must be added exempting WRD from those parts of the permit that can only be met after construction and startup are complete.
VI.3	24-25	59	Deletion recommended per Talking Point #5 (Technically Unsupported Requirement). The requirement that the annual report be “approved by the Executive Officer” is confusing and sets a new precedent on how annual informational reports are handled by the RWQCB. <b>Please refer to Attachment 7 for additional information on Nitrogen and the relevance of the 10% change above what would be predicted by the SNMP mixing model.</b>
Footnote 16	25	Not numbered	The Regional Water Board agreed to this exemption per earlier meetings regarding the January 2014 tentative Order.
VII	27	60	Talking Point #10 (Impending Statewide Change in Potable Water Reuse Permitting). <b>Additional comments are provided in Attachment 5.</b>
VII.2	27	61	This language is not appropriate for this type of project as it is used for NPDEs permits. Recommend replacing with language consistent with Water Code section 13263.
VII.2	27	62	Suggestions for clarity.
VII.5	27	63	Talking Point #10 (Impending Statewide Change in Potable Water Reuse Permitting). <b>Additional comments are provided in Attachment 5.</b>  Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) for pathogen control. <b>Additional comments are provided in Attachment 9.</b>
VII.6	27	64	Per Talking Point #8 (Repetitive Permit Requirements), repeats VII.5.

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IX.	28	65	<p>WRD Requests that the Permit become effective on October 1, 2014, which is the date that the expanded LVLWTF is expected go online full scale and would allow the Projector Sponsors to fully comply with the Permit requirements. If the Order takes effect upon adoption (or earlier than October 1<sup>st</sup>), the Project Sponsors risk violation of the following Permit provisions:</p> <p><u>CDPH Conditions</u> – Treatment specifications (#2, #3, #4, and #5); validation of pathogen reduction (#6 and #7); TOC online analyzer monitoring (#17); and operating at peak performance (#21).</p> <p><u>Regional Water Board's Requirements:</u>  II (Recycled water treatment specification); IV.2 (CDPH conditions), and</p> <p>MRP - Continuous monitoring for conductivity and TOC using online analyzers upstream and downstream of RO (IV.2.C.iii); AOP measurements (IV.2.C.iv); calculation of pathogenic microorganism log reduction achieved each day (IV.2.C.v); and tabulation of monitoring results that do not meet the surrogate limits established to assure proper performance of RO/AOP (IV.2.D.iv)</p>
<b>MRP</b>			
I.1.a	MRP-1	66	Clarification added for factual accuracy.
I.1.a	MRP-1	67	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).
II.1.b	MRP-3	68	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
II.1.f	MRP-3	69	Talking Point #5 (Technically Unsupported Requirement); also comment associated with Table M-18.
II.11	MRP-5	70	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).
II.11	MRP-5	71	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).
III.1.a.viii	MRP-7	72	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).
III.1.c, d, e	MRP-7	73	Talking Point #8 (Repetitive Permit Requirements) that are already included in other provisions. Graphical reporting requirement for quarterly reporting is new (not in the existing Order) and excessive, without a corresponding benefit (required as part of annual report) – Recommend deletion.
III.1.f	MRP-8	74	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).
III.2.c.ii	MRP-8	75	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
III.2.h	MRP-8	76	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
III.4	MRP-9	77	Talking Point #8 (Repetitive Permit Requirements) that are already included in other provisions. Recommend removal.
III.4.a	MRP-9	78	Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #2: A numerical model and tracer study has been completed, whose results verified the retention and response time is adequate prior to the recycled water reaching the nearest domestic water supply well.

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III.4.b.vii	MRP-10	79	Talking Point #5 (Technically Unsupported Requirement). This is an additional, unnecessary requirement, not in the existing Order.
IV.1.a and b	MRP-10	80	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
IV.1.a and b	MRP-10-11	81	Changes made, to be consistent with the existing Order.
IV.1 Table M-2	MRP-11	82	<p>Per the comment on Order I.2 a and b: The 15 mg/L BOD and TSS conditions listed have no regulatory basis for water reclamation treatment. Neither Title 22 nor the CDPH Draft Groundwater Replenishment Regulations define what constitutes adequate oxidation. Metcalf &amp; Eddy reports that BOD and TSS following activated sludge treatment with nitrification can be 25 mg/L for each parameter. [Metcalf &amp; Eddy, 2007, <i>Water reuse issues, technologies, and applications</i>. New York, NY: McGraw Hill.]</p> <p>The requirements are not even consistent with the discharge limits for the Long Beach and Los Coyotes WRPs NPDES permits where the monthly BOD limits are 20 mg/L; the TSS monthly limits are 15 mg/L. Limits for BOD and TSS in these permits are more stringent than federally mandated technically based limits and therefore represent conditions beyond what is considered to be "adequately oxidized."</p> <p>The addition of these requirements presents added compliance liability, which is fully addressed as part of the Long Beach and Los Coyotes NPDES permits. We therefore recommend that they be deleted.</p>
IV.2.a.iii	MRP-11	83	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
IV.2.a.iv	MRP-11	84	Talking Point #8 (Repetitive Permit Requirements) - encompassed in 2.a.i.
IV.2.a.iv and Table M-3	MRP-11	85	Talking Point #8 (Repetitive Permit Requirements) - already included in subsection c "Evaluation of Pathogenic Microorganism Removal" on MRP-18.
IV.3.a.iii	MRP-12	86	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
IV.3.a and Table M-4	MRP-11-12	87	Talking Point #8 (Repetitive Permit Requirements) leads to confusion. The requirements pertaining to CECs and corresponding surrogates appear later in the MRP in Tables M-14 and M-15, and therefore, recommend removal to avoid confusion.
IV.3.b	MRP-12	88	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).
IV.3.b and	MRP-12	89	Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

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Table M-5			
IV.3.b and Table M-5	MRP-13	90	Talking Point #6 (Inconsistent with CDPH GWR Regulations). The log reductions include treatment as well as underground retention time. The appropriate monitoring requirements are presented in 3.c.
IV.3.b and Table M-5	MRP-13	91	Talking Point #5 (Technically Unsupported Requirement). Not a CDPH requirement, not part of the existing Order. These are covered under MCL monitoring. Recommend deletion.
IV.3.b and Table M-5	MRP-13	92	Talking Point #8 (Repetitive Permit Requirements), already covered under inorganic primary MCLs, same monitoring frequency. Recommend deletion.
IV.3.b and Table M-12	MRP-16	93	Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: *As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.
IV.3.b and Table M-12	MRP-16	94	Footnote 23 - Excessive frequency (monthly, weekly) unwarranted based on last five years of monitoring data. Recommend removal of footnote.
IV.3.b and Table M-12	MRP-17	95	Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: *As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.
IV.3.b and Table M-12	MRP-17	96	Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: *As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.
IV.3.c.ii	MRP-20	97	Talking Point #8 (Repetitive Permit Requirements) and Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #16.
IV.3.c.iii	MRP-20	98	Talking Point #8 (Repetitive Permit Requirements) - see CDPH Condition #17.
IV.3.d	MRP-20	99	Based on the suggested October 1, 2014 effective date of the permit - some parts of this section may not be relevant (i.e. already completed) so the language may require a modification.
IV.3.4.iv	MRP-21	100	Talking Point #8 (Repetitive Permit Requirements) - see CDPH Condition #5.

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IV.4.a and Table M-17	MRP-23-24	101	Talking Point #5 (Technically Unsupported Requirement). Based on the most recent 5 years of monitoring data, this requirement is deemed excessive and unnecessary since NDMA in recycled water was consistently below 10 ng/L (except for one isolated and minimal event that occurred during the first quarter 2013 at 17 ng/L) and given that the expansion will include an AOP.
IV.5	MRP-25	102	Talking Point #8 (Repetitive Permit Requirements) and Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #19. Talking Point #5 (Technically Unsupported Requirement). Based on the most recent 5 years of monitoring data, this requirement is deemed excessive and unnecessary since NDMA in recycled water was consistently below 10 ng/L (with one isolated minimal exception at 17 ng/L) and given that the expansion will include an AOP.
IV.5	MRP-25	103	Talking Point #5 (Technically Unsupported Requirement). Modeling shows no impact of concern for nitrogen. <b>See Attachment 7.</b>
IV.5	MRP-25	104	Talking Point #5 (Technically Unsupported Requirement) and Talking Points #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water). Based on the monitoring data for the recycled water, almost all of the constituents are not detected (see section 7 of the 2013 approved Engineering Report) and therefore do not pose a concern. The rationale is questionable for this new requirement, which places a significant resource and financial burden on the Project Sponsor without a corresponding benefit.
IV.5 Table M-19	MRP-26 ~ MRP-27	105	Talking Point #5 (Technically Unsupported Requirement) and Talking Points #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water). Based on the monitoring data for the recycled water, almost all of the constituents are not detected (see section 7 of the 2013 approved Engineering Report) and therefore do not pose a concern. The rationale is questionable for this new requirement, which places a significant resource and financial burden on the Project Sponsor without a corresponding benefit.
IV.5 Table M-20	MRP-31	106	What does *** mean - there is no note for the table? This table appears identical to Table 13-16 from the 2013 approved Engineering Report. If so, *** associated with Table 13-16 was used to note the following: "The March 23, 2007 letter from the CDPH approved semi-annual monitoring; however, starting 2007, constituent has been consistently ND. Therefore, annual monitoring frequency is proposed.
IV.5 Table M-20	MRP-32	107	Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."
IV.5 Table M-20	MRP-33	108	Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."

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IV.5 Table M-20	MRP-33	109	Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."
IV.5 Table M-21	MRP-36	110	Talking Point #5 (Technically Unsupported Requirement) – This is an onerous new requirement, and it is unclear why this is being added. WRD does not own these drinking water wells. The closest drinking water well, SB-LEI's Title 22 monitoring data are already required to be included in the Annual Report. Recommend removal.
V.	MRP-36-37	111	WRD recommends that this Order take effect after the Startup testing is completed. The reporting of the startup testing results to the regulatory agencies is covered under R4-2005-0061-A01; therefore, this provision is deemed not relevant and thus recommend removal.

# **ATTACHMENT B**

## Attachment B

### Talking Points for the Meeting with Sam Unger, RWQCB

#### RE: April 14, 2014 Public Draft Alamitos Barrier Order

1. **Introduction:** The new April 14, 2014 Draft Tentative Order has many organizational improvements from the earlier draft versions and is much easier to follow. WRD appreciates the efforts put in to improve the document. However, there are some major issues that remain problematic for WRD that we would like to highlight below. Of major concern is the tone of some of the findings that WRD has degraded water quality through the VanderLans Project and therefore new requirements are necessary to prevent further degradation. Other comments are related to consistency with State policies on anti-degradation, the Recycled Water Policy, and supporting recycled water reuse as a benefit instead of referring to the highly treated water as a “waste”. Detailed comments will be provided during the 30-day review period.
2. **Inconsistent with State Drought Policy.** In keeping with the Governor’s January 2014 Drought Proclamation regarding recycled water, the State Water Board states on its website that in response to the drought:

“The State and Regional Boards are expediting permitting to safely use recycled water.”

Expediting permits involves more than just quickly releasing and adopting a permit. It also includes insuring that the provisions in a permit are not arbitrary or capricious and that they promote and do not create obstacles to the use of recycled water. When we first discussed issuance of a permit for the expanded Alamitos Barrier Project (Project) with the California Department of Public Health (CDPH) and RWQCB beginning in 2010 with a follow up meeting in 2012, it was conceived to be a simple amendment of the existing Order that would be placed on the Board’s consent calendar. In fact, Finding 31 of the April 14, 2014 Order states “...CDPH determined that ‘provided that WRD meets all of the above conditions and findings of fact, the Department [CDPH] finds that the ABRWP [Barrier Project] can provide injection recharge water **that will not degrade groundwater basins** as a source of water supply for domestic purposes.’” [Emphasis added]. For reasons we cannot understand, it has transformed into a complicated and contentious permit process with unsound provisions, with much time being spent by staffs of WRD and RWQCB on comments and revisions and attempts to make it work. The VanderLans project has proven successful since 2005 in helping to stop degradation of the basin from seawater by injecting high quality advanced treated recycled water. The expansion is just an increase in the volume of highly purified recycled water for a successful groundwater replenishment project with additional enhanced advanced treatment provided. We don’t understand why we continue to be in this antagonistic process, which is contrary to the intent of actions being taken by state agencies to address the drought.

3. **Inconsistent with Anti-degradation Policy.** The April 14, 2014 draft Order is inconsistent with the State’s Anti-degradation Policy (Resolution 68-16). The most obvious example can be found in Finding 44, which states:

“Compliance with the requirements of this Order is expected to **prevent** the degradation of high quality waters. **To ensure that no degradation is occurring**, the Project Sponsors are required by the MRP to submit a technical report after start-up testing of the expanded facility is completed and to regularly monitor the advanced treated recycled water and the receiving groundwater in proximity to the injection wells.” [Emphasis added]

Resolution 68-16 does not require that a condition of no degradation occur – it allows for a change in water quality if it is consistent with the maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than prescribed in the policies, all of which will be met by the Project. With regard to Finding 44, WRD believes that the RWQCB should make the appropriate anti-degradation findings (as already enunciated in Resolution 68-16 and the Recycled Water Policy for this type of project) to acknowledge some minor changes in water quality in comparison to ambient conditions may occur as evidenced in the modeling performed as part of the Central Basin and West Coast Basin Salt Nutrient Management Plan and groundwater data collected for the Project and WRD’s regional groundwater monitoring program; however, such changes are not significant and are consistent with the maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than prescribed in the policies.

4. **Project Mischaracterization Leading to an Unwarranted Unfavorable Depiction of the Project.** The April 14, 2014 draft Order includes information that is lacking detail, and is over generalized or non-factual, thereby leaving the impression that the current Project and the expansion have or will have a detrimental impact on groundwater. One example includes how arsenic and selenium are characterized in groundwater and recycled water per Finding 24 (with Table 1) and Finding 25. These findings (specifically, Table 1) are misleading and do not provide sufficient detail to explain historical and current groundwater quality conditions and the lack of impact on water quality as a result of the Project. Injection does not occur into the Recent Aquifer, yet increases in arsenic and selenium are cited. Though at the end of Finding 25, RWQCB says that “Arsenic and selenium have not been detected in the recycled water injected at the Barrier”. Other constituents are cited as increasing, yet their concentrations are lower than background concentrations before the Project started. Coliform is cited as increasing, although coliforms have never been detected going into the barrier water. For this and similar reasons, Table 1 should be modified or deleted. We are not sure what benefit it provides and it only leads to an unwarranted negative tone for the Project. Further, the findings fail to explain or consider (1) the number of samples, data ranges, standard deviations of data, etc.; (2) which groundwater zones receive or do not receive injected water to put the information into context; (3) if analytical detection levels or reporting levels have changed during the monitoring periods that would impact judgments regarding if a trend is occurring or not; and (4) if differences in data are even statistically significant. RWQCB has ignored

our requests to include readily available information in the approved 2013 Engineering Report that provides sufficient detail and analysis and can easily be converted into more appropriate permit findings.

5. **Technically Unsupported Requirements.** The April 14, 2014 draft Order includes new provisions from earlier versions that are not technically supported. For example, provision VI.3 (related primarily to nitrogen) states that:

“A 10% change in the water quality sampled at any of groundwater monitoring wells in Table M-20, over that predicted in the Project Sponsors’ first annual report and approved by the Executive Officer, shall trigger further analysis to be included in each subsequent annual report. These studies shall include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the SNMP model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated. A reopener clause is provided in section VII.”

The major form of nitrogen that will be detected in groundwater is nitrate. Per the work done for the Central Basin and West Coast Basin Salt Nutrient Management Plan, including technical memos that have been reviewed by all stakeholders including the RWQCB, the baseline nitrate concentration in the Central Basin Pressure area where the Project is located is 0.10 mg/L. A 10% change in concentration would be 0.01 mg/L. This *de minimis* change (please note the water quality objective is 10 mg/L) in concentrations is not statistically relevant nor does it present a water quality issue worthy of “further analysis.” Further, the requirement that the annual report be “approved by the Executive Officer” is confusing and sets a new precedent on how annual informational reports are handled by the RWQCB.

6. **Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations.** The April 14, 2014 draft Order includes provisions that are not consistent with the July 2013 CDPH Conditions or the June 2013 Draft Groundwater Replenishment Regulations. For example, RWQCB continues to try and establish effluent limitations for pathogens, which is not the intent or approach prescribed by CDPH (see draft Order II.5 and Table 6 that set minimum treatment requirements for UV power and hydrogen peroxide dose; and III.1 and Table 7 – that set effluent limits for specific pathogens). Instead, the pathogen log reductions required per CDPH Conditions #6 and #7 incorporate treatment performance of primary and secondary processes at the Long Beach Water Reclamation Plant; microfiltration, reverse osmosis, and UV advanced oxidation at the VanderLans Advanced Water Treatment Facility (AWTF); and for virus, six months of underground retention time. In accordance with CDPH conditions, WRD will update the existing Operations Plan to describe the different monitoring parameters and testing that will be done to validate log reductions from the different treatment components. This complex multi-barrier approach cannot be transformed into simplistic end-of-pipe limits. In fact, CDPH has repeatedly told RWQCB to not take this approach, yet it remains in the permit.

7. **Permit Requirements Inconsistent with Previous Approvals.** The April 14, 2014 draft Order includes language that is not consistent with prior permit amendments. For example, in March 2014, the RWQCB adopted permit amendment R4-2005-0061-A01 that allowed for start-up testing of the advanced treatment system. Permit Amendment Provision 1 stated:

“The pH of the product water for injection or recharge water shall be, at all times, within the range of 6.5 to 8.5 pH units, except during the AWTF expansion startup testing (per Section IV.6 of the accompanying Monitoring and Reporting Program) during which the pH of the product water shall be within the range of 6 to 9 pH units.”

Yet, this same language is not used in the April 14, 2014 draft Order. Effluent Limitation III.3. states that:

“The pH of the advanced treated recycled water shall be, at all times, within the range of 6.5 to 8.5 pH units, except during the Vander Lans WTF expansion startup testing, when the pH of the advanced treated recycled water may be within the range of 6 to 9 pH units, under specific and necessary operational conditions as defined by the Project Sponsor, **for up to one week.**” [Emphasis added]

The highlighted language was not in the approved permit amendment and changes the compliance period for the modified pH limits without justification.

8. **Repetitive Permit Requirements That Should Be Streamlined.** The April 14, 2014 draft Order contains repetitive, enforceable requirements that are unnecessary and create dual liability, an issue that has been repeatedly brought to the attention of the RWQCB, but remain in the permit. A key example is repeating and imposing compliance with maximum contaminant levels (MCLs) in recycled water in multiple places in the permit by listing numeric MCL-based limits, narrative requirements for MCLs that refer to compliance with drinking water regulations, or referring to CDPH Conditions that address compliance with MCLs (for example see draft Order provisions II.1, III.1 and Table 7, III.4, and IV.2). MCL-based recycled water specifications only need to be mentioned in one place in the permit and preferably using the language from CDPH Condition #11.
9. **Permit Treats Project As Disposal of Waste Versus Beneficial Reuse of Recycled Water.** In California, “recycled water” is defined as “water which, as a result of treatment of **waste**<sup>1</sup>, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a **valuable resource.**” (Water Code § 13050(n)). It is the high level of treatment in accordance with CDPH requirements that transforms water from being legally considered a “waste,” to being considered “recycled water” for regulatory purposes. WRD employs such treatment as recognized by CDPH; however, RWQCB continues in the April 14, 2014 Draft Order to treat the water used for groundwater

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<sup>1</sup> “Waste” is defined as “sewage and any and all other waste substances ... associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.”

injection as a “waste” (and “recycled water” – it cannot be both). See Order Finding 38 for example, in addition to the Order title as “Waste Discharge Requirements”. This position conflicts with a variety of State laws and policies that recognize the distinction between “waste” disposal and beneficial use of “recycled water,” and meant for those distinctions to have meaning (See, e.g., State Water Board Resolution 77-1, which finds that: “The California Legislature has declared that the people of the State have a primary interest in the development of facilities to **reclaim water containing waste to supplement existing surface and underground water supplies**”; the State Water Board’s Recycled Water Policy that declares that “when used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, the State Water Board finds that recycled water is safe for approved uses, and **strongly supports recycled water as a safe alternative to potable water** for such approved uses”; see also Water Code sections 13510, 13512, and 13560). Increasing the acceptance, and promoting the use, of recycled water is a recognized means for achieving sustainable local water supplies; thus, the State, the State and Regional Water Boards, and local governments all seemingly share the same goal of promoting recycled water use via protective, but *reasonable*, requirements.

10. **Impending Statewide Change in Potable Water Reuse Regulation and Permitting.** Within three months, there will be statewide changes that will affect approval and permitting of groundwater replenishment projects. Effective July 1, 2014: (1) the CDPH Drinking Water Program, including recycled water responsibilities, will be moved to the State Water Resources Control Board’s (State Water Board’s) new Division of Drinking Water per the March 2014 *Drinking Water Reorganization Transition Plan*; (2) In accordance with Senate Bill 104, CDPH must adopt the groundwater replenishment regulations by June 31, 2014 as emergency regulations without Office of Administrative Law review; and (3) it is expected that legislation will be adopted providing the new State Water Board Division of Drinking Water with the authority to issue potable reuse permits by July 1, 2014. There are ongoing discussions at the State Water Board level on how potable reuse permitting will be implemented. Given the future of groundwater replenishment projects under a new regime and our concerns regarding fundamental shortcomings in the April 14, 2014 Draft Order, it is premature and inadvisable to move forward with the Alamitos Barrier Order (in its current form) at this time.

# **ATTACHMENT C**

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

**ORDER NO. R4-2014-xxx**

**WASTE DISCHARGE REQUIREMENTS AND  
WATER RECYCLING REQUIREMENTS**

**FOR THE**

**LEO J. VANDER LANS WATER TREATMENT FACILITY AND THE  
ALAMITOS BARRIER RECYCLED WATER PROJECT**

**ISSUED TO**

**Water Replenishment District of Southern California and  
Los Angeles County Department of Public Works**

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

**I. BACKGROUND**

1. The Los Angeles County Department of Public Works (Los Angeles County DPW) and the Orange County Water District (OCWD) co-own and operate the Alamitos Gap Seawater Intrusion Barrier (Barrier). Figure 1 shows the location of the Barrier.
2. Prior to the construction of the Barrier, decades of over-pumping caused the water levels in the Central Groundwater Basin and Orange County Groundwater Basin to drop, resulting in a loss of groundwater from storage and seawater intrusion into the potable aquifers, rendering portions of the basins unsuitable for beneficial use. The Barrier began operations in 1965 and is designed to protect the Central Groundwater Basin and portions of the Orange County Groundwater Basin from seawater intrusion through the creation of a pressure ridge by injection of fresh water into the Barrier through an alignment of 41 injection wells. These wells are located approximately two miles inland from the mouth of the San Gabriel River at the Los Angeles/Orange County boundary. The pressure ridge created by the Barrier 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 southwestern Orange County, and the potential loss of this water resource.
3. There are seven groundwater-bearing units defined in the vicinity of the Barrier, including from shallowest to deepest the Recent Aquifer, Zones C, B, A, and I, the Main Aquifer (also known as the Silverado Aquifer), and the Lower Main Aquifer (also known as the Sunnyside Aquifer or Lower San Pedro Aquifer). The geological

Commented [A1]: Per Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water), WRD requests that the permit be issued only as Water Recycling Requirement to recognize the advance treated recycled water is not a waste. Additional comments are Provided in Attachment 1.

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cross-section for these aquifers is illustrated in Figure 2. Due to geologic conditions, seawater intrusion has a direct pathway into the Recent Aquifer and the C, B, A, and I Zones. The deeper Main and Lower Main aquifers are protected from intrusion by the Seal Beach Fault and overlying low-permeability layers. Injection occurs into the C, B, A, and I Zones, not into the Recent, Main, or Lower Main aquifers.

4. The Water Replenishment District of Southern California (WRD) manages the Central and West Coast Groundwater Basins. WRD owns ~~and manages~~ the Leo J. Vander Lans Water Treatment Facility (Vander Lans WTF or Facility) in the City of Long Beach (City) and is the purveyor of recycled water produced by the Facility that is injected into the Barrier. The City operates and maintains the Facility for WRD. Figure 3 shows the location of the Facility. Prior to 2005, only potable water was injected into the Barrier. Since October 2005, the Facility has produced up to 3 million gallons per day (mgd) of high quality advanced-treated recycled water that is injected into the Barrier in combination with potable water pursuant to Regional Water Board Order No. R4-2005-0061, State Water Board Order WQ-2006-0001 and Amendment R4-2006-0061-A01. The program of producing and delivering advanced treated recycled water to the Barrier is known as the Alamitos Barrier Recycled Water Project (Project).
5. Together, WRD and Los Angeles County DPW (collectively referred to as ~~Dischargers or~~ Project Sponsors) propose to produce up to 8 mgd of advanced treated recycled water for injection into the Barrier to replace the potable water currently used.
6. The ~~Los Angeles County~~ Sanitation Districts of Los Angeles County (County Sanitation Districts) owns and operates the Long Beach Water Reclamation Plant (Long Beach WRP), which produces disinfected tertiary recycled water that is the source water for advanced treatment at the Facility. To meet the needs for additional source water at the expanded Facility, disinfected tertiary recycled water from the Los Coyotes Water Reclamation Plant (Los Coyotes WRP), also owned and operated by the County Sanitation Districts, may be used to supplement the existing supply from the Long Beach WRP. The City owns the rights to the recycled water produced at the Long Beach WRP ~~and Los Coyotes WRP.~~

## II. PURPOSE OF ORDER

7. The treatment of recycled water at the Vander Lans WTF and injection into the Barrier were previously permitted under Order R4-2005-0061 (2005 Order), issued by the Regional Water Board on September 1, 2005, as amended by WQ-2006-0001 issued by the State Water Board on April 5, 2006 and Order No. R4-2005-0061-A01 issued by the Regional Water Board on March 6, 2014.
8. The Alamitos Barrier straddles the border between the jurisdictional areas of the Los Angeles Regional Water Board and the Santa Ana Regional Water Board. In a February 8, 2004 letter to the Santa Ana Regional Water Board, the Los Angeles Regional Water Board requested the lead on permitting the Project. This request was granted by the Santa Ana Regional Water Board in a letter dated July 30, 2004.
9. On October 23, 2012, the Project Sponsors submitted a Report of Waste Discharge

**Commented [A2]:** Important factual information from the 2013 approved Engineering Report, which is hereby incorporated by reference; see [http://www.wrd.org/engineering/reports/LVLWTF\\_Engineering\\_Report\\_Revised\\_Final\\_With\\_Appendices.pdf](http://www.wrd.org/engineering/reports/LVLWTF_Engineering_Report_Revised_Final_With_Appendices.pdf).

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**Commented [A3]:** Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) - the terminology used is not consistent with CDPH Findings of Fact and Conditions; **please refer to Attachment 2, the cover letter and CDPH Findings of Fact and Conditions.**

**Commented [A4]:** The City of Long Beach only has the rights to recycled water from the Long Beach WRP.

**Commented [A5]:** Recognizes the recent amendment - Order No. R4-2005-0061-A01 issued by the Regional Water Board on March 6, 2014.

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requesting amendment of the Waste Discharge Requirements and Water Recycling Requirements (WDRs/WRRs) to reflect a proposal to expand the Facility 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 November 6, 2012.

10. On October 23, 2012, the Project Sponsors submitted an amended Title 22 Engineering Report for the expansion of the Facility to the Regional Water Board and the California Department of Public Health (CDPH). The Engineering Report was later revised in response to comments received from CDPH. A final version was submitted on March 29, 2013, for review by CDPH and the Regional Water Board, and was approved by CDPH on April 4, 2013. On June 26, 2013, CDPH held a public hearing in Lakewood, California to consider findings of fact regarding the planned Facility expansion and conditions to be imposed on the Project to ensure protection of public health and ensure that the Project will not degrade groundwater quality as a source of domestic water supply. There were no objections voiced concerning the Project at the public hearing. CDPH submitted to the Regional Water Board the Findings of Fact and Conditions for the Project adopted by CDPH on July 12, 2013. The CDPH found that the Project will not degrade the quality of the water in the receiving aquifers as a source of domestic water supply provided that all of the conditions are met.
11. The Findings of Fact adopted by CDPH pertaining to the Project on July 12, 2013, see Attachment 1, are incorporated by reference into the findings of this Order. Some findings are repeated in this Order for clarity and information.

### III. ALAMITOS BARRIER RECYCLED WATER PROJECT

12. The Vander Lans WTF is located at 7380 East Willow Street, Long Beach, California adjacent to the Long Beach WRP and between the San Gabriel River and Coyote Creek (Figure 3).
13. Description of Tertiary Treatment at Long Beach and Los Coyotes WRPs.
  - a. The primary source water for the expanded Vander Lans WTF is disinfected tertiary recycled water from the Long Beach WRP. The production of tertiary recycled water at the Long Beach WRP is regulated by WRR Order No. 97-07206. The discharge of that water to surface water is regulated under ~~and~~ WDR Order R4-2007-0047, and WDR Order R4-2007-0047.
  - b. In the future, disinfected tertiary ~~recycled water effluent~~ may also be supplied to the Vander Lans WTF by the Los Coyotes WRP, which is regulated separately under WRR Order No. 97-07204. The discharge of that water to surface water is regulated under ~~and~~ WDR Order R4-2007-0048, and WDR Order R4-2007-0048.
  - c. The County Sanitation Districts maintains a comprehensive industrial and pretreatment control program approved by the United States Environmental Protection Agency (USEPA) for control of waste discharges from industrial and commercial sources into its wastewater collection system.

**Commented [A6]:** Added to clarify the location of the hearing and that it was in proximity to the Project.

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**Commented [A7]:** Inserted per Water Code section 13540 and CDPH's requirement to make a finding regarding degradation of groundwater quality as a source of domestic water supply.

**Commented [A8]:** No need to state. Our comments in this document endeavor to reduce the repetition and provide clarity.

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**Commented [A9]:** To be consistent with terminology in III.13.a.

**Commented [A10]:** Factual correction: The production of recycled water is regulated under the 1997 Master Reclamation Permits for the WRPs. The discharge of wastewater to surface water is regulated under the two NPDES permits, and thus not applicable to the production of recycled water.

This comment is supported by language in the NPDES permits. **Order R4-2007-0047** distinguishes the production of recycled water as follows:

**"B. Reclamation Specifications – Discharge Point 001**

1. The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRRs) Order No. 87-47, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997.

1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page 16.

**"VI. RECLAMATION MONITORING REQUIREMENTS**

The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRRs) Order No. 87-47, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997.

Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page E-18.

For Order **R4-2007-48**, the production of recycled water is described as follows:

**"B. Reclamation Specifications**

1. The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRR) Order No. 87-51, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997.

1997. Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and were readopted without change in Order No. 97-072, adopted May 12, 1997." See page 15.

**"VI. RECLAMATION MONITORING REQUIREMENTS**

The production, distribution, and reuse of recycled water are presently regulated under Water Reclamation Requirements (WRR) Order No. 87-51, adopted by this Board on April 27, 1987, continued in Board Order No. 97-072, adopted on May 12, 1997.

Pursuant to California Water Code section 13523, these WRRs were revised in 1997 and

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- d. Treatment at the Long Beach and Los Coyotes WRPs is very similar, and consists of primary sedimentation, activated sludge biological treatment with nitrification and denitrification, secondary sedimentation, inert media filtration, and chlorine disinfection treatment processes. The design capacity of the Long Beach WRP is 25 mgd. The design capacity of the Los Coyotes WRP is 37 mgd.
14. The current treatment train at Vander Lans WTF consists of microfiltration (MF) to reduce the turbidity and silt density of the feed water; reverse osmosis (RO) to remove additional salts, minerals, metal ions, organic compounds and microorganisms; ultraviolet irradiation (UV) to provide disinfection and N-Nitrosodimethylamine (NDMA) reduction; decarbonation; pH adjustment; corrosivity stabilization; and, blending with potable water. WRD has developed an operating plan for the Vander Lans ~~WTF which~~ WTF, which will be updated prior to operation of the expanded Facility.
15. The Project Sponsors seek to change the quantity of the recycled water injected at the Barrier from approximately 50 percent recycled water and 50 percent potable diluent water to 100 percent recycled water. ~~The percentage of recycled water will be calculated based on the running monthly average recycled water contribution for the preceding period of 120 months during periods when less than 100% recycled water is discharged. The total amount of water injected into the aquifers will not change (up to 8 mgd). To maintain the quality of the injected water, the expanded Vander Lans WTF will include treatment enhancements. The expanded Vander Lans WTF will include some treatment enhancements and will continue to treat wastewater to meet drinking water maximum contaminant levels and other limits imposed on recycled water intended for groundwater replenishment.~~ The expanded Facility is designed to produce approximately 8,960 acre-feet of recycled water per year (AFY), which is equivalent to 8 mgd. The treatment approach and technology used at the expanded Facility is depicted in Figure 4 and described in additional detail in CDPH's Findings of Fact.
16. ~~The Vander Lans WTF was designed to accommodate future expansion to produce up to 8 mgd of advanced treated recycled water. Prior to the commissioning of the future expanded facility in the fall of 2014, WRD plans to conduct a series of startup tests from approximately April to August 2014. Duration of the individual tests will vary from days to weeks, and the Advanced Water Treatment Facility (AWTF) will operate between 3 to 8 mgd intermittently during the startup testing. The treatment level provided during the startup testing will consist of the treatment train described above as required by Order No. R4-2005-061 with the addition of hydrogen peroxide immediately upstream and UV to create an advanced oxidation process, which will oxidize 1,4-dioxane and other organic chemicals.~~ The Vander Lans WTF was designed to accommodate future expansion to produce up to 8 mgd of advanced treated recycled water. Prior to the commissioning of the future expanded facility in the fall of 2014, WRD plans to conduct a series of startup tests from approximately April to August 2014. Duration of the individual tests will vary from days to weeks, and the Facility will operate between 3 to 8 mgd intermittently during the startup testing. The treatment level provided during the startup testing in accordance with Amendment R4-2005-0061-A01 will consist of the treatment train described above as required by Order No. R4-2005-061 with the addition of hydrogen peroxide immediately upstream of UV to provide advanced

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**Commented [A11]:** Talking Point # 8 (Repetitive Permit Requirements That Should Be Streamlined) and Talking Point # #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) - Duplicative and somewhat inaccurate representation of CDPH Condition #9 on page 15 of Attachment 2; per CDPH Condition #9, WRD is required to calculate a monthly RWC under all operating conditions. This Condition does not belong in a permit finding section. **Additional comments regarding Talking Point # 6 are provided in Attachment 2; Additional comments regarding Talking Point #8 are provided in Attachment 3.**

**Commented [A12]:** Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), this statement is factually inaccurate. The inclusion of treatment enhancements is not to "maintain" the quality of the injected water, but to comply with the latest changes to the Draft Groundwater Replenishment Regulations. These requirements are intended to improve water quality by oxidizing constituents that are not well removed by RO. See CDPH Finding #7 on page 3 and Finding #10, on page 6 regarding AOP in Attachment 2. Suggest rewording as shown.

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oxidation for removal of organics and enhanced disinfection.

17. The treatment approach and technology used at the expanded Facility to produce advanced treated recycled water is depicted in Figure 4 and will consist of the following:

a. Influent Equalization (EQ): If tertiary effluent from the Los Coyotes WRP is used as influent to the Vander Lans WTF, the flow will be equalized in the influent EQ basin and pump-fed to the Primary Micro Filtration (MF) system. (Pumping is not required when disinfected tertiary effluent from the Long Beach WRP is used as influent to the Vander Lans WTF since the effluent from Long Beach WRP effluent has 60 to 100 pounds per square inch (psi) of pressure.)

b. Micro Filtration (MF):

i. MF Pretreatment Chemical Addition: If tertiary effluent before chlorination from the Los Coyotes WRP is used for the Vander Lans WTF influent, then chloramination (using sodium hypochlorite and aqueous ammonia) may be added to the equalized flow to control bio-fouling of the MF and RO membranes. Additional chemical addition before MF filtration is unnecessary and will not be used if the Facility uses tertiary effluent from the Long Beach WRP only.

ii. Primary MF Automatic Strainers: Subsequently, the flows will be fed into three (two duty and one standby) automatic self-cleaning 500-micron strainers to protect the downstream MF membranes from damage and/or fouling from large particles. The backwash waste from the Primary MF automatic strainers may be discharged to either the backwash waste (BWW) equalization basin or the Facility waste EQ basin.

iii. Primary MF System: From the strainers, the flow will be fed into six 100-module MF skids. The MF system consists of pressurized MF units with hollow fiber, polyvinylidene fluoride membranes having a maximum pore size of 0.1 micron. The MF system is designed to produce 8.1 mgd. The MF filtrate will be stored in a break tank and the MF Units will be periodically backwashed to clean the membranes.

iv. Backwash Treatment (BWT): The BWW flows from the Primary MF automatic strainers and Primary MF system will be equalized in the BWW EQ Basin and pumped to the dissolved air floatation (DAF) system for treatment. Ferric chloride is utilized as a coagulant injected upstream of the DAF system. DAF effluent flow will be equalized in the DAF Effluent EQ Basin and pumped to the BWT MF system, which consists of four 25-module MF skids. Similar to the Primary MF system, the BWT MF automatic strainer is provided upstream of the BWT MF membranes to protect the BWT MF membranes from damage and/or fouling from large particles. One automatic strainer will be provided as a duty unit, and one manual basket strainer will be provided as a standby. The Primary MF effluent and the BWT MF effluent will be mixed and discharged into the existing MF Filtrate Tank (or Break Tank as shown in Figure 4).

**Commented [A13]:** Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), this statement is not factually correct. The current AWTF does not provide advanced oxidation, only UV. As part of the expansion, and to be evaluated during start-up, WRD will add hydrogen peroxide upstream of UV so the treatment system provides advanced oxidation. This change is consistent with the findings in Amendment R4-2005-0061-A01. Suggest rewording entire paragraph as shown.

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- c. Reverse Osmosis (RO): Stored MF filtrate will be pumped from the MF Filtrate Tank to the RO system, which will consist of two 2-stage RO trains in parallel and three (two duty and one standby) third stage RO trains. To control scaling and to protect the RO membranes, the pretreatment (consisting of addition of sulfuric acid for pH control, ~~the addition of~~ a threshold inhibitor; and cartridge filters) is provided both upstream of the two 2-stage RO trains and also immediately upstream of the third stage RO process. The RO process will produce approximately 8.0 mgd and includes a high pressure feed pump and pressure vessels. Each pressure vessel will contain high rejection thin film composite polyamide membrane elements. The entire RO system is designed for an overall 92 percent recovery rate. Permeate from the RO system will be fed to the advanced oxidation process ~~(AOP)~~. Concentrated brine from the RO system will be discharged directly to ~~GSDLAC's~~ County Sanitation District's Joint Outfall System sewer system.
- d. Ultra Violet/Advanced Oxidation Process (UV/AOP): The UV/AOP at the Vander Lans WTF will consist of ultra violet irradiation (UV) with hydrogen peroxide addition upstream of the UV trains. The UV/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, notably NDMA and 1,4-dioxane. The UV system exceeds the requirements delineated in the "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" (August 2012) published by the National Water Research Institute (NWRI). The UV system consists of the existing (pre-expansion) system as well as an add-on system. The existing UV system consists of nine 30AL50 Trojan UVPhox™ reactors that employ low-pressure, high-output technology, with each reactor containing 30 lamps, utilized in a tower arrangement with three reactors per level over three levels. The expansion will add two new trains of three stacked D72AL75 Trojan UVPhox™ reactor chambers, where the third reactor chamber in each train is redundant and includes only one (1) 72-lamp reactor zone. There are two reactor chambers in each UV vessel. The third vessel only utilizes one of the reactors. No waste will be generated. The total nominal capacity of the existing UV system is 8.0 mgd. At this flow rate and UV transmittance of 95 percent, the delivered UV dosage from the proposed system is estimated to exceed 300 millijoule per square centimeter (mJ/cm<sup>2</sup>).
- e. Decarbonation: Following UV/AOP treatment, the water will pass through a decarbonator to reduce carbon dioxide, increase pH, and stabilize the product water.
- f. Post-Treatment Systems (pH Adjustment/Corrosivity Stabilization/Disinfection): Caustic soda (sodium hydroxide) will be added to the water to increase pH, and calcium chloride will be added to reduce the potential for minerals to be leached from the cement lining used in the transmission pipeline. In order to maintain a certain threshold of total chlorine residuals required by the Los Angeles County DPW to prevent bio-fouling and clogging of the injection wells, sodium hypochlorite and aqueous ammonia will be added to the product water to maintain the required level of total chlorine

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residuals. The levels of sodium hypochlorite and aqueous ammonia to be added will be fine-tuned to effectively manage potential formation of disinfection byproducts.

18. The Facility may bypass or discharge partially-treated or treated water to a trunk sewer leading to the County Sanitation District's Joint Water Pollution Control Plant in Carson.

#### IV. RECYCLED WATER INJECTION SYSTEM

19. The transmission of the advanced treated recycled water from the Facility will not change as a result of the expansion. Currently, the advanced treated recycled water is pumped westward along Willow Street to the Blend Station where it mixes with imported water before being conveyed two miles to the distribution header. From the header, the advanced treated recycled water is injected into the Barrier. The alignment of injection wells extends westward along 7th Street from Margo Avenue to the San Gabriel River, where it turns towards the south along the Los Alamitos Channel (see Figure 1 for the well alignment). Two types of injection wells were constructed at the Barrier: nested and composite. Nested wells are constructed with a single casing, but can inject water into different aquifers separated by grout seals. The composite type injection wells are comprised of casings similar to the nested casings, except that they are screened in multiple aquifer zones without grout seals between them. The injection wells include 41 wells of which 16 are single injection wells, injecting only into either the A or I aquifers; 19 are dual injection wells, injecting separately into the A/I or C/B aquifers; and seven wells are composite wells that inject simultaneously into the C/B/A/I aquifers. Distances between injection wells vary from approximately 50 feet to 1,200 feet, for a total span of approximately 1.2 miles.

20. The OCWD is in the planning stages to construct eight additional injection well locations (20 separate casings) to better control seawater intrusion into the Orange County Groundwater Basin. Total injection rates for the eight new wells are anticipated to be approximately 1,011 AFY. The location, design, and injection rates of these new wells were included in the updated modeling studies for the **2013 approved** amended Engineering Report to predict travel time and movement of the injected water after their construction. ~~Project Sponsors will provide the location and design for any new injection wells to CDPH and the Regional Water Board in accordance with the requirements specified in this Order.~~

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Commented [A14]: This is a permit condition and does not belong in the permit finding section.

#### V. GROUNDWATER STUDIES

21. The April 15, 2011, *Addendum to the Five-year Engineering Report for the Barrier* contained a technical memorandum from INTERA, reviewing the ability of the Project Sponsors' groundwater model to predict the fate and transport of the recycled water through the aquifers. Between 2006 and 2010, the water in Zones C, B, A and I compared favorably to aquifer conditions predicted using the numerical flow and transport model, with a transmissivity-weighting scheme. Particle tracking simulations were used to confirm the modeled and observed break-through analysis for recycled water concentrations at the monitoring wells. Figure 1 is a map showing the injection well locations. Figure 2 is a cross section for that map delineating the

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aquifer zones. For the approved 2013 Engineering Report, the INTERA model was updated to include the Facility expansion plans and the 8 new injection wells that will be constructed by OCWD to improve Barrier performance. The model was used to update calculations and predictions of future recycled water fate and transport in the aquifers based on groundwater conditions after the expanded Facility and the new wells are in operation.

Commented [A15]: This clarifies which report is being referenced.

22. The closest active domestic well to the Barrier is SB-LEI (State Well No. 05S/12W-01A03) owned and operated by the City of Seal Beach and is located approximately 4,840 feet to the east of the Barrier. Tracer studies and groundwater models determined that recycled water will travel underground for approximately 4.3 years before reaching SB-LEI in the I-Zone. Because of the tracer studies and modeling work previously done for the Project, a new tracer study will not be required for the Facility expansion.

23. ~~Drinking water standards have not been exceeded at the nearest drinking water well, Seal Beach well SB-LEI as a result of the injection project, as shown by the Title 22 drinking water reports. However, Based on groundwater modeling travel time analysis of 4.3 years to the nearest drinking water well SB-LEI, and project startup in October 2005, recycled water is thought expected to have reached the well by now since injection began in 2005. Drinking water standards have not been exceeded at SB-LEI as a result of the injection project, as shown by the Title 22 drinking water reports. The SB-LEI well is perforated in both the I-Zone, which is recharged by at the Barrier, and the deeper Main and Lower Main Aquifers, which are is not recharged by the Barrier. contains no recycled water. As a result, it is likely possible that the water produced from the well is a blend composite of both the tapped aquifers tapped by the well. I-Zone and the Main Aquifer resulting in a blended source water used for drinking water. changes to water quality from recycled water contributions have not been detected because of dilution from deeper horizons.~~

Commented [A16]: Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), suggested wording provides factual and unbiased information on groundwater quality and effects of recycled water on SB-LEI. **Additional comments are Provided in Attachment 4.**

24. ~~The 2005 Order required collection of monitoring data before the start of injection of recycled water into the Barrier, and annual assessment of data collected thereafter. Of 230 constituents measured at ten monitoring wells (including two background wells and eight compliance monitoring wells), most stayed constant or improved in comparison to background groundwater quality information collected in 2005 and 2006. In general, water quality at the ten wells is within primary and secondary drinking water standards. Aquifer concentrations of arsenic and selenium increased, from non-detect to a maximum of 22 mg/L (which is above the MCL of 10 mg/L) and from non-detect to a maximum of 61 mg/L (which is above the MCL of 50 mg/L), respectively. Chloride, total dissolved solids (TDS), and manganese all showed variations above and below background levels as water quality was restored with the prevention of sea water intrusion. Odor and total coliform appear at levels above background in the deepest aquifer receiving injected water in monitoring wells located a year of travel time from the Barrier. In addition, n-Nitrosodimethylamine (NDMA) concentrations rose in the wells at the Barrier after injection of recycled water began. Exceedances of MCLs were most commonly observed in the Recent Aquifer, the shallowest aquifer, which does not receive injection water. All of the constituents exceeding the MCLs were present during the 2005 initial background monitoring (pre-injection period) in similar concentrations except for arsenic and selenium, which have increased since 2005. Arsenic and selenium have consistently~~

Commented [A17]: Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project). As originally presented, this paragraph and Table 1 implied the Project had negatively impacted groundwater. In fact, groundwater data do not suggest the Project has increased background concentrations for these select compounds. **Additional comments are Provided in Attachment 4.**

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~~not been detected in the recycled water injected into the barrier have consistently not been detected. As such, elevated levels of arsenic and selenium concentrations in the Recent Aquifer are attributed to sources other than injected water, such as background concentrations. In the C-Zone, B-Zone, A-Zone, and I Zone Aquifers, manganese has been measured at elevated concentrations; however, the in concentration ranges are similar to those observed in the 2005 initial background monitoring, and appear thus indicative of non-project related ambient conditions. In the Main Aquifer, which does not receive injection water, only chloride, specific conductance, and TDS were consistently observed at elevated concentrations, but the values generally showing a decreasing trend from the 2005 initial background monitoring, thus indicating ve of improved groundwater quality in the aquifer. Based on the review of the recycled water monitoring data for the past five years (2009-2013), arsenic, selenium, and coliform were never detected in the recycled water produced by the Facility. The highest concentration detected in the recycled water from 2009 to 2013 for chloride, total dissolved solids (TDS), manganese, and odor are 28 milligram per liter (mg/L), 110 mg/L, 2.7 microgram per liter (µg/L), and 4 threshold odor number (TON), respectively.~~

**Table 1 – INCREASES IN GROUNDWATER CONCENTRATION MEANS**

Constituents (MCLs or other standard)	Units	2012	2011	2010	2005 or 2006 Background
<b>3-month travel time in Recent aquifer</b>					
Arsenic (10)	µg/L	17	22	16	ND
Selenium (50)	µg/L	61	53	35	ND
Chloride (500)	mg/L	7025	6275	5475	5407
TDS <sup>1</sup> (1,000)	mg/L	13500	13000	9925	13350
<b>3-month travel time in C-Zone</b>					
Manganese (50)	µg/L	101	108	97	94
Odor(3)	TON	11	2	3	4
<b>3-month travel time in B-Zone</b>					
Manganese (50)	µg/L	62	62	61	68
Odor(3)	TON	3	2	1	4
Total Coliform(1.1) <sup>2</sup>	MPN/100mL	ND-1.1	ND	ND	ND
<b>3-month travel time in I-Zone</b>					
Odor	TON	14	3	3	5
<b>1-year travel time in C-Zone</b>					
Manganese (50)	µg/L	101	113	98	95
Odor(3)	TON	3	2	3	7
<b>1-year travel time in B-Zone</b>					
Manganese (50)	µg/L	63	66	63	77
Odor	TON	3	2	3	6
<b>1-year travel time in I-Zone</b>					
Odor(3)	TON	3	2	1	4
Total Coliform(1.1)	MPN/100mL	ND-1.1	ND	ND	ND

**Commented [A18]:** Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), recommend deleting this table as currently constructed as there is no basis for any increases due to Project. **Additional comments are Provided in Attachment 4.**

25. ~~Based on the review of the recycled water monitoring data for the past five years (2009-2013), the highest concentration detected in recycled water for chloride, TDS,~~

<sup>1</sup>Total dissolved solids.  
<sup>2</sup>Basin Plan limit is 1.1 MPN/100 mL.

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manganese, and odor are 28 milligrams per liter (mg/L), 110 mg/L, 2.7 micrograms per liter (µg/L) and 4 threshold odor number (TON), respectively. Arsenic and selenium have not been detected in the recycled water injected at the Barrier.

25. A total of 220 observation wells are currently operated at the Barrier. These wells are monitored by LACDPW for water levels and chloride concentrations to determine the effectiveness of the seawater barrier. The monitoring wells tap the Recent, C, B, A, and I aquifers. WRD monitors the movement of the injected recycled water using 21 observation wells at 8 locations. The 21 wells include the eight monitoring wells where routine water quality sampling is conducted pursuant to the existing WDRs/WRRs, and 13 tracer wells, whose primary function is to trace the movement of recycled water. Prior to project initiation, CDPH concurred with WRD that recycled water should be chemically distinct from previously injected potable water and native groundwater due to advanced treatment process, particularly RO that produces water with much lower mineral content than the other waters. Therefore, properties of the recycled water can be used as a groundwater tracer to follow recycled water movement and travel time. The tracer well program was terminated in December 2009 since it fully satisfied the 2005 WDRs/WRRs.

## VI. REGULATION OF RECYCLED WATER

26. State authority to oversee recycled water use is shared by CDPH, the State Water Board, and the Regional Water Boards. CDPH<sup>3</sup> is the agency with the primary responsibility for establishing water recycling criteria under Title 22 of the Code of Regulations 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 reclamation requirements for water that is used or proposed to be used as recycled water.

Effective July 1, 2014, the personnel in the CDPH Drinking Water Program working on recycled water will be organized under the new State Water Board as the new Division of Drinking Water. In addition, the Administration will propose language for the Legislature to consider that provides the Division of Drinking Water the authority to issue permits for potable reuse of recycled water.

27. 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 waste water and supports water recycling projects.
28. 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 reuse of recycled water from

<sup>3</sup> Effective July 1, 2014, the State Water Board Division of Drinking Water Any successor agency to CDPH's responsibilities to oversee groundwater replenishment with recycled water in aquifers designated as sources of drinking water shall be substituted in place of every reference to CDPH in the conditions and requirements of this Order, and in the findings of this Order where appropriate.

Commented [A19]: Per Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project), changes recommended. Additional comments are Provided in Attachment 4.

Commented [A20]: Finding 26 and Footnote 2: Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting). Comments are Provided in Attachment 5.

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Commented [A21]: Per Talking Point #9 (Permit Treats Project As Disposal of Waste Versus Beneficial Use of Recycled Water); this is not a waste after treatment. Comments are Provided in Attachment 1.

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municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Recycled Water Policy describes the respective authority of CDPH and the Regional Water Boards as follows:

*Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment of permit conditions needed to protect human health. (section 5.b)*

*Nothing in this paragraph shall be construed to limit the authority of a Regional Water Board to protect designated beneficial uses, provided that any proposed limitations for the protection of public health may only be imposed following regular consultation by the Regional Water Board with CDPH, consistent with State Water Board Orders WQ 2005-0007 and 2006-0001. (section 8.c)*

*Nothing in this Policy shall be construed to prevent a Regional Water Board from imposing additional requirements for a proposed recharge project that has a substantial adverse effect on the fate and transport of a contaminant plume or changes the geochemistry of an aquifer thereby causing dissolution of constituents, such as arsenic, from the geologic formation into groundwater. (section 8.d)*

Because the same volume of water will be injected and because chemical stabilization will be applied to the final recycled water prior to injection, the Vander Lans WTF expansion will not affect the fate and transport of any contaminant plume or change the geochemistry of the recharged aquifers causing dissolution of constituents from natural geologic formations into the groundwater. Increases in groundwater aquifers, such as arsenic, are attributed to background conditions via saltwater intrusion.

**Commented [A22]:** Inconsistent with Recycled Water Policy. To be consistent with the Policy, the finding should also include language that the Project will not cause dissolution of chemicals nor impact to contaminant plumes as identified in the Engineering Report. **Comments are Provided in Attachment 6.**

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Based on the information reviewed as part of WRD's Groundwater Contamination Prevention Program and because the same volume of water will be injected as part of the Project, the Facility expansion will not affect the fate and transport of any contaminant plume.

In addition, the Policy notes the continuing obligation of the Regional Water Boards to comply with the state's anti-degradation policy, Resolution No. 68-16:

*The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the legislature's intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state. (section 9.a)*

- 29. A 1996 Memorandum of Agreement (MOA) between CDPH 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. Effective July

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1, 2013, provisions in the MOA may not longer be in effect pending legislation that provides the new Division of Drinking Water with the authority to issue permits for the potable use of recycled water.

**Commented [A23]:** Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting).  
**Comments are Provided in Attachment 5.**

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30. Section 13523(a) of the Water Code provides that a Regional Water Board, after consulting with and receiving recommendations from CDPH, 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. Pursuant to Water Code section 13523, the Regional Water Board has consulted with CDPH and received its recommendations. On June 26, 2013, CDPH held a public hearing to consider the proposed expansion of the Vander Lans WTF and use of recycled water for the Barrier. On July 12, 2013, CDPH transmitted to the Regional Water Board its Findings of Fact and Conditions concerning the expansion of the Vander Lans WTF. Effective July 1, 2014, legislation proposed by the Administration will amend the Water Code provisions to provide the Division of Drinking Water with the authority to issue permits for potable reuse of recycled water.

**Commented [A24]:** Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting).  
**Comments are Provided in Attachment 5.**

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31. Section 13540 of the Water Code requires that recycled water may only be injected into an aquifer used as a source of domestic water supply if CDPH finds the recharge will not degrade the quality of the receiving aquifer as a source of water supply for domestic purposes. In its Findings of Facts and Conditions, CDPH determined that "provided that WRD meets all of the above conditions and findings of fact, the Department [CDPH] finds that the ABRWP [Barrier Project] can provide injection recharge water that will not degrade groundwater basins as a source of water supply for domestic purposes."

32. Section 13523(b) of the Water Code provides that reclamation requirements shall be established in conformance with the uniform statewide recycling criteria established pursuant to Water Code section 13521. Section 60320 of Title 22 currently includes requirements for groundwater recharge projects. Water Code Sections 13562 and 13562.5 require of the Water Code requires CDPH to adopt uniform water recycling criteria for indirect potable reuse for groundwater recharge as emergency regulations without Office of Administrative Law review by June 30, 2014. CDPH has developed Draft Groundwater Replenishment with Recycled Water Regulations draft Recycling Criteria for Groundwater Recharge Reuse (Draft GWRR) (latest version is dated June 26, 2013). The requirements of the Draft GWRR for virus reduction and response retention time — the time recycled water must be retained underground between recharge and extraction to allow a project sponsor ample time to identify treatment failures and implement appropriate actions to protect public health — are addressed in additional detail in CDPH's Findings of Fact.

**Commented [A25]:** For a comparison of the 2013 Draft Regulations and the Regulations in effect when the 2005 Order was adopted, **please refer to Attachment D.**

**Commented [A26]:** Edited for factual information: This finding does not acknowledge that Section 60320 of Title 22 includes requirements for Groundwater Recharge projects, which were used by CDPH to approve the Project (see cover letter from CDPH to Sam Unger, dated July 12, 2013). In addition, Senate Bill 104 amends the Water code by adding Section 13562.5 that requires CDPH to adopt the groundwater replenishment regulations by June 30, 2014 as emergency regulations without review by the Office of Administrative Law (**see comments in Attachment 6**). The last sentence in this finding seems out of place in that there are numerous requirements in the June 2013 Draft Groundwater Replenishment Regulations. The CDPH Findings make note of numerous provisions in the Draft Groundwater Replenishment Regulations including source control, the Operations Plan, pathogen control, response retention time, calculation of RWC, etc.

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## VII. OTHER APPLICABLE PLANS, POLICIES AND REGULATIONS

33. 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 anti-degradation 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.

34. The Basin Plan incorporates the California Code of Regulations (CCR) Title 22 primary Maximum Contaminant Levels (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 ground waters shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses, so ~~that~~ this Order incorporates all secondary MCLs based on aesthetic and organoleptic standards.

35. The Basin Plan contains water quality objectives for the Central Groundwater Basin, which is the receiving water affected by the injection of recycled water at the Barrier. The beneficial uses of the Central Groundwater Basin are as follows:

Receiving Water Name	Beneficial Use(s)
Los Angeles Coastal Plain (Central Basin); Department of Water Resources (DWR) Basin No. 4-11.04)	<u>Confined Aquifer</u> Existing Beneficial Uses: Municipal and domestic water supply (MUN); industrial service supply (IND); industrial process supply (PROC); and agricultural supply (AGR).

36. The mineral water quality objectives for these groundwater basins are:

DWR Basin No.	Basin	Objectives (mg/L)			
		TDS	Sulfate	Chloride	Boron
4-11.04	Central Basin Confined aquifers	700	250	150	1.0

37. Pursuant to California Water Code (Water Code) 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.~~

38. ~~Pursuant to Water Code 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~~

**Commented [A27]:** Talking Point #8 (Repetitive Permit Requirements). This Finding establishes that secondary MCLs will be used to interpret the narrative Basin Plan objective, yet in the permit provisions, there are repetitive requirements for narrative secondary MCLs and the narrative Basin Plan objective. If secondary MCLs are not to be used to interpret the narrative objective, this Finding must be modified accordingly. **Comments regarding repetitive permit requirements are Provided in Attachment 3.**

**Commented [A28]:** The purpose of this Section VII is to catalog applicable plans, policies and regulations. It is not to discuss the Order. It should be noted that compliance with some MCLs can be determined in locations other than the injected water. We suggest deleting the final sentence. Consistent with other permits, we recommend that a finding be included to address the State Water Board's Sources of Drinking Water Policy. **We recommend adding a finding here for that policy using the following language:**  
 "The Sources of Drinking Water Policy (Resolution No. 88-63) provides that all waters of the state, with certain exceptions are to be protected as existing or potential sources of municipal and domestic supply. Exceptions include waters with existing high dissolved solids (i.e., greater than 3,000 mg/L), low sustainable yield (less than 200 gallons per day for a single well), waters with contamination that cannot be treated for domestic use using best management practices or best economically achievable treatment practices, waters within particular municipal, industrial and agricultural wastewater conveyance and holding facilities, and regulated geothermal groundwaters."

**Commented [A29]:** Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). The advanced treated water is not a waste and therefore it is not appropriate to have this paragraph here.

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~~Board to issue waste discharge requirements that implement any relevant water quality control plan.~~

39. 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. ~~This Regional Board terms these limits "effluent limitations" when included in waste discharge requirements for discharges to waters of the State. In this application, the term "effluent" means "something that flows out"<sup>4</sup> and is not limited to treated wastewater. The advanced treated recycled water produced by the Vander Lans WTF is effluent by this definition. The effluent limitations in this Order are not "effluent limitations" as defined by the Clean Water Act and related federal regulations because they do not apply to discharges to waters of the United States.<sup>5</sup> The effluent limitations in this Order are not enforceable under Chapter 5.5 of the Water Code, including section 13385, subdivisions (h) and (i), but are enforceable under other applicable sections of the Water Code, including but not limited to section 13350.~~
40. A goal of the Recycled Water Policy (State Water Board Resolution No. 2009-0011) 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 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 loading of salts and nutrients to groundwater basins in a manner that is protective of beneficial uses, thereby supporting the sustainable use of local waters.

~~The Central Basin and West Coast Basin Stakeholders are preparing an SNMP for submittal to the Regional Water Board by August 31, 2014 in accordance with the May 6, 2014 letter from Samuel Unger, Regional Water Board Executive Officer. As part of the technical work conducted for the SNMP, The Water Replenishment District and other participants have generated a hydrology model was developed to calculate the salt and nutrient concentrations in the Central Basin from all sources, including due to the use of recycled water for recharge through injection and spreading. Based on model results, under normal operating conditions the Vander Lans Facility will not consume 10% of the assimilative capacity of total nitrogen in the sub-basin. An additional model run was performed to test the hypothetical injection of a continual 10 mg/L nitrate-nitrogen into the barrier. The model predicted s that if the Vander Lans Facility can injected water with 10 mg/L total nitrogen at the Alamitos Barrier for several decades, before consuming 10% of the assimilative capacity for the entire sub-basin would still not be consumed. Therefore, the sub-basin is not at risk of significant degradation of total nitrogen from the Project. While~~

<sup>4</sup> See, e.g., Webster's Third New International Dictionary (1986).

<sup>5</sup> Section 502(11) of the Clean Water Act defines "effluent limitation" as "any restriction established by a State or the Administrator on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable waters, the waters of the contiguous zone, or the ocean, including schedules of compliance." 40 C.F.R. section 122.2 defines "effluent limitation" as "any restriction imposed by the Director on quantities, discharge rates, and concentrations of pollutants which are discharged from point sources into waters of the United States, the waters of the contiguous zone, or the ocean." (internal quotation marks omitted).

**Commented [A30]:** Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). Per "

Effluent" imparts a negative tone to the advanced treated recycled water. There is no authority to impose effluent limitations for a recycled water / groundwater recharge project in the Water Code. Effluent limitations are a NPDES term. To promote a positive tone to this high quality manufactured water, do not use "Effluent Limitations". We propose "Recycled Water Treatment Specifications" or "Recycled Water Discharge Specifications". Note: Placeholder for additional comments to be submitted for 30-day comment period regarding each talking point. **Additional comments regarding Talking Point #4 are provided in Attachment 1.**

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the local water quality is expected to slightly increase from the sub-basin background concentrations of 1.1 mg/L total nitrogen, the overall water quality in the Central Basin is not expected to increase above the Basin Plan groundwater, surface water and drinking water limits-objectives of 10 mg/L nitrogen as nitrate-nitrogen plus nitrite-nitrogen or 10 mg/L nitrate-nitrogen or 1 mg/L nitrite-nitrogen. The model has been described in public meetings and reviewed by the Regional Board staff, but full consideration of the SNMP as a reference in, or as an amendment to, the Basin Plan (in a hearing before the Regional Water Board) is not expected before 2015. However, guidance in the Recycled Water Policy and current drought conditions support the immediate use of recycled water in place of potable water sources where consistent with public health and safety. This Order allows the immediate use of recycled water while requiring groundwater monitoring to confirm the model predictions, i.e. to demonstrate that recharge with recycled water impacts the drinking water resources as predicted by the SNMP.

Commented [A31]: Reworded for more accuracy and to help support the reason for going to the 10 mg/L nitrogen limit – consistent with CDPH Condition #9 and no significant impact on basin nitrates based on modeling even if 10 mg/L were continually injected, which will not happen. Additional comments are provided in Attachments 7 and 7.1.

41. CDPH established a Notification Level of 10 nanograms per liter (ng/L) for NDMA in drinking water sources at which concentration a responsible water agency is required to notify the public. CDPH established a Response Reporting Level of 300 ng/L for NDMA, at which concentration CDPH recommends additional steps beyond notification—a responsible water agency is required to stop drinking water delivery. At this time, CDPH has not established a Maximum Contaminant Level (MCL) for NDMA. Per the U.S. EPA Integrated Risk Information System, NDMA is classified as B2, a probably human carcinogen, NDMA is identified by the Regional Water Board as a constituent of concern because it is created by the disinfection process and has a known cancer risk. Further, NDMA has been identified by the The State Water Board in the Recycled Water Policy includes NDMA as a health-based and treatment performance-based constituent chemical of emerging concern which concern (CEC), for monitoring which should be sampled in recycled water used for groundwater replenishment through injection because of the human health risks. In May 2008, recycled water from the Vander Lans WTF containing high levels of NDMA with a maximum concentration of 445 ng/L, was injected into groundwater at the Alamitos Barrier. WRD promptly investigated and eventually shut down the Facility to correct the problem which problem, which was identified as an instrument communications error, and the communication error was corrected. Since the completion of the repairs, NDMA in the recycled water has been consistently below the NL, except for one isolated exception marginally above the Notification Level at 17 ng/L. The resulting NDMA in the groundwater from the 2008 event subsurface plume is calculated to have arrived at the nearest drinking water well, SB-LEI, in 2012. NDMA has never been detected above the reporting limit of 2 ng/L in SB-LEI, where the concentration was reduced through dilution from the main aquifer before delivery. WRD reports that operations were changed at the Facility to prevent a recurrence. Although no MCL has been established for NDMA, the Regional Water Board and CDPH agree that the Vander Lans WTF must prevent similar concentrations of NDMA from entering the groundwater.

Commented [A32]: Language is not accurate. Additional comments are provided in Attachment 8 regarding Health and Safety Code provisions for Notification Levels and Response Levels, and the designation of NDMA as a carcinogen.

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Commented [A33]: Per Talking Point #4 (Unfavorable Depiction of the Project). This excursion was 6 years ago and WRD stopped the Facility to correct the condition. Since then, the Project has operated favorably. The expanded Facility incorporates AOP, which provides an additional barrier for reduction of NDMA. We recommend using only the last 5 years (2009-2013) of water quality data which is customary when renewing permits.

42. 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*

Commented [A34]: Talking Point #4 (Unfavorable Depiction of the Project). No reason for this sentence and implies a negative tone towards the Project. Following all conditions of the Permit will ensure the Project is safe and protects groundwater. This finding also ignores information in the Engineering Report (see page 7-5) that shows the change in NDMA in groundwater was temporal (also see comments in Attachment 4).

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*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:

*[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.*

43. The need for the technical and monitoring reports required by this Order, including the Monitoring and Reporting Program, are based on the Report of Waste Discharge (ROWD) and Engineering Report; the CDPH Finding of Facts and Conditions; the California Environmental Quality Act (CEQA) Initial Study; 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.
44. 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 anti-degradation policy for the State Water Board and Regional Water Boards. Resolution No. 68-16 requires that existing high quality waters be maintained through regulation that achieves the highest water quality consistent with maximum benefit to the people of the State, reasonably protects present and anticipated beneficial uses of waters, and ensures attainment of water quality prescribed in applicable policies. The Regional Water Board's Basin Plan implements, and incorporates by reference, the state anti-degradation policy. This Order is consistent with Resolution No. 68-16. As described in the Findings herein, WRD is implementing the best practicable treatment or control of the discharge. Compliance with this Order will protect present and anticipated beneficial uses, ensure attainment of water quality prescribed in applicable policies, and avoid any conditions of pollution or nuisance.

**Commented [A35]:** The revisions suggested here are consistent with Talking Point # 3 (Inconsistent with Anti-degradation Policy).

~~Compliance with the requirements of this Order is expected to prevent the degradation of high quality waters. To ensure that no degradation is occurring, the~~

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~~Project Sponsors are required by the MRP to submit a technical report after start up testing of the expanded facility is completed and to regularly monitor the advanced treated recycled water and the receiving groundwater in proximity to the injection wells. If the information in these technical and monitoring reports indicates that the provisions in this Order are not sufficient to prevent degradation of the groundwater, the Regional Board may reopen these WRRs/WDRs to add additional terms and conditions.~~

~~This Order requires the best practicable treatment or control 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. This Order requires the advanced treated recycled water to meet all drinking water standards and prohibits injection of water that would cause violation of any water quality objective within the aquifer, or operation of the wells in a manner that causes a condition of pollution or nuisance. This Order conforms with the directives of the State Water Board's Recycled Water Policy, the purpose of which is to increase the use of recycled water from municipal wastewater sources in a manner that complies with state and federal water quality laws~~

#### VIII. CEQA AND NOTIFICATION

45. The Project Sponsors prepared an Initial Study for a proposed project to inject 100 percent recycled wastewater into the Alamitos Barrier, with WRD serving as the lead agency. Based on the Initial Study, WRD determined that the proposed project would not have a significant impact on the environment. On March 9, 2012, WRD issued a revised Notice of Intent to adopt a Negative Declaration for the proposed project. The Notice of Intent was posted on the WRD website and in the Long Beach Press Telegram, with mailings to interested parties, and circulation through the State Clearinghouse (#20120205) and the Los Angeles County Clerk's Office. The 30 day public review process ended on April 9, 2012. WRD received and responded to four comments, none of which necessitated changes in the Negative Declaration. The Negative Declaration was adopted by the WRD Board of Directors on April 20, 2012, and the project was approved by the WRD Board of Directors on May 4, 2012. The Negative Declaration was filed with the State Clearinghouse on May 7, 2012. No further comments or objections were received during the subsequent 30 days. An addendum to the Negative Declaration was approved by the WRD Board of Directors on May 14, 2013. The Project has completed the notification and review process required by CEQA. The Regional Water Board is a responsible agency for purposes of CEQA. The Regional Water Board has considered the Initial Study, which did not identify significant environmental effects with respect to water quality.
46. Any person aggrieved by this action may petition the State Water Resources Control Board (State Water Board) to review the action in accordance with Water Code section 13320 and California Code of Regulations, Title 23, section 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the internet at: [http://waterboards.ca.gov/public\\_notices/petitions/water\\_quality](http://waterboards.ca.gov/public_notices/petitions/water_quality)

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Or will be provided upon request.

47. The Regional Water Board has notified the Project Sponsors and 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. R4-2005-0061, with MRP No. CI-8956, is 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 Water Code (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 Board from taking enforcement action for past violations of the previous Order.

**I. PRETREATMENT INFLUENT SPECIFICATIONS**

- ~~1. WRD shall maintain a legal agreement with the County Sanitation Districts that requires a comprehensive industrial pretreatment and pollutant source control program at the Long Beach WRP and Los Coyotes WRP, implemented to prevent contaminants that might adversely impact the quality of the reclaimed water being produced by the Vander Lans WTF from entering the sewer system. The program shall be in place at the time recycled water from the particular facility is used as source water for the Vander Lans WTF. At a minimum the program shall include:~~
- ~~a. An assessment of the fate of CDPH and Regional Water Board specified contaminants through the wastewater and recycled municipal wastewater treatment systems;~~
  - ~~b. Contaminant source investigations and contaminant monitoring that focus on CDPH and Regional Water Board specified contaminants;~~
  - ~~c. An outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water recycling facility subsequently supplying the Barrier, for the purpose of managing and minimizing the discharge of contaminants at the source;~~
  - ~~d-a. A current inventory of contaminants identified pursuant to this section, including new contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system.~~
- ~~2. The influent to the Vander Lans WTF shall be tertiary treated effluent as described in the approved 2013 Title 22 Engineering Report and shall at all times be adequately oxidized. Upon a determination that the influent to the Vander Lans WTF exceeds the following limits, the Project Sponsors shall submit a technical report to the Regional Water Board within 90 days documenting the exceedances and response actions taken to maintain performance of the treatment facilities and compliance with~~

**Commented [A36]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #8 that could lead to multiple permit exceedances for same issue and should be deleted.

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~~the requirements in this Order. It shall be considered adequately oxidized when it meets the following conditions:~~

- ~~a. 15 mg/L monthly<sup>(1)</sup> average Biochemical Oxygen Demand value (BOD<sub>5</sub>-20°C), determined monthly using the average of the analytical results of all 24 hour composite samples taken at least weekly during the month.~~
- ~~b.1. 15 mg/L monthly average Total Suspended Solids (TSS) concentration, determined monthly using the average of the analytical results of all 24-hour composite samples taken daily during the month.~~

## II. RECYCLED WATER TREATMENT SPECIFICATIONS

1. ~~Treatment of the recycled water shall be as described in the Findings of this Order and the Findings of Fact and Conditions issued by CDPH.~~
2. ~~The recycled water shall be, at all times, adequately oxidized, filtered, disinfected, and subject to organics removal by RO and UV/AOP treatment. There shall be no bypassing of any treatment process, except for decarbonation and caustic soda addition, which provide pH adjustment as required for stabilization.~~
3. ~~The turbidity of the RO feed water after the MF treatment 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. Whenever the turbidity limit is exceeded, the Vander Lans WTF will be shut down and the injection of recycled water will be suspended until such time that the cause of the high turbidity condition has been identified and corrected.~~
4. ~~The advanced treatment process at the Vander Lans WTF will include RO and an UV/AOP that, at a minimum, meet the following standards. The RO membrane shall comply with ASTM method D4194-03 (2008), which achieves a minimum rejection of sodium chloride of no less than 99.0 percent and an average (nominal) rejection of sodium chloride of no less than 99.2 percent under the following conditions:
  - ~~a. Recovery: 15 percent.~~
  - ~~b. Influent pH: between 6.5 and 8.0.~~
  - ~~c. Sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized.~~
  - ~~d. An influent sodium chloride concentration of no greater than 2,000 mg/L.~~
  - ~~e. During the first 20 weeks of full-scale operation the membrane produces a permeate with no more than 5 percent of the sample results having TOC concentration greater than 0.25 mg/L, as verified through monitoring no less frequent than weekly.~~~~
5. ~~The advanced treated process must result in adequate disinfection. The in-stream monitoring of that process shall not indicate UV power level or Hydrogen Peroxide in~~

<sup>(1)</sup> "Monthly" is a calendar period that is not necessarily 30 days.

**Commented [A37]:** This requirement is new and was not part of the existing 2005 permit. Removal recommended, per Talking point #5 (Technically Unsupported Requirements) since the influent criteria were not exceeded under the existing permit.

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**Commented [A38]:** The 15 mg/L BOD and TSS conditions listed have no regulatory basis as applied to treatment for water reclamation. Neither the Water Code, Title 22, nor the CDPH Draft Groundwater Replenishment Regulations require their imposition, and the values cited do not correlate to any prescribed definition of adequate oxidation. Metcalf & Eddy reports that BOD and TSS following activated sludge treatment with nitrification can be 25 mg/L for each parameter. [Metcalf & Eddy, 2007, *Water reuse issues, technologies, and applications*. New York, NY: McGraw Hill.] Orders adopted by the Regional Water Board not supported by the findings, or findings not supported by the evidence, constitute an abuse of discretion. *Topanga Association for a Scenic Community v. County of Los Angeles*, 11 Cal.3d 506, 515; *California Edison v. SWRCB*, 116 Cal. App.3d 751, 761 (4th Dt. 1981); see also *In the Matter of the Petition of City and County of San Francisco, et al.*, State Board Order No. WQ-95-4 at page 10 (Sept. 21, 1995). Furthermore, imposition of unreasonable, unsupported, and/or unnecessary BOD and TSS limitations unfairly places the District in a difficult enforcement position, as a minor exceedance of these values may result in a technical violation or administrative action, but not result in, or represent, any problematic water quality condition. Such outcomes should be avoided. (See Water Code §13000)

Further, the requirements are even inconsistent with (and more stringent than) the discharge limits for the Long Beach and Los Coyotes WRPs NPDES permits that supply the ... [2]

**Commented [A39]:** Talking Point #8 (Repetitive Permit Requirements) that could unreasonably lead to multiple exceedances for same issue. Since the CDPH FOF and Conditions are attached and enforceable, provisions 2-5 are not necessary - they correspond to CDPH Conditions #3, #16, and #4.

**Commented [A40]:** Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations). Note, 4. a, b, c, and d are conditions for new membranes and not an ongoing requirement.

**Commented [A41]:** Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) for pathogen control.

**Additional comments are provided in Attachment 9.**

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~~amounts less than the following:~~

Constituent	Unit	Minimum
UV power level	%	TBD <sup>6</sup>
Hydrogen Peroxide	ml/min	TBD
Hydrogen Peroxide	mg/L	TBD

**III. EFFLUENT LIMITATIONS RECYCLED WATER DISCHARGE SPECIFICATIONS**

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

Constituents	Units	Daily Max/Annual Average	Rolling Annual Average <sup>7</sup>	Other
Total Recycled Water Flow	mgd		8 <sup>8</sup>	
Total Organic Carbon	mg/L		0.5 <sup>9</sup>	
Lead	mg/L		0.15	
Copper	mg/L		1	
TDS	mg/L	700		
Chloride	mg/L	150		
Sulfate	mg/L	250		
Boron	mg/L	1.0		
Total Nitrogen <sup>10</sup>	mg/L		10	
Nitrate plus Nitrite as N	mg/L		10	
Nitrate	mg/L		10	
Nitrite	mg/L		1	
Cyanide	µg/L		150	
Enteric virus	Log			TBD
Giardia	Log			TBD
Cryptosporidium	Log			TBD

- ~~The advanced treated recycled water shall be disinfected such that the 7-day median number of total coliforms shall not exceed 2.2 total coliform bacteria per 100 milliliters (mL), and the number of total coliform organisms shall not exceed 23 total~~

<sup>6</sup> TBD: The CDPH will determine the treatment indicators which result in sufficient deactivation of viruses after the pilot test is completed and the results evaluated. Values based on the design removal described in the CDPH conditions will be used if the values are not determined within a year of adoption.

<sup>7</sup> Based on quarterly measurement unless otherwise noted. The long averaging period, relative to daily maximum or average monthly compliance periods used for surface water discharges, acknowledges the comparatively slow rate of groundwater movement and mixing before beneficial use.

<sup>8</sup> Based on continuous measurement.

<sup>9</sup> Compliance with 0.5 mg/L based on the 20-week running average of all TOC results and the average of the last four TOC results.

<sup>10</sup> Total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as nitrogen. The Project Sponsors shall collect each week, one grab or 24-hour composite samples of the recycled water for total nitrogen, nitrite plus nitrate as nitrogen, nitrate and nitrite.

**Commented [A42]:** Talking Point #4 (Project Mischaracterization / Unfavorable Depiction of Project) and Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water). There is no authority to impose effluent limitations for a recycled water / groundwater recharge project in the Water Code. Effluent limitations are a NPDES term. To not imply a negative tone to project related to wastewater, do not use "Effluent Limitations".

**Commented [A43]:** Justification for averaging period for Basin Plan groundwater objectives. The Los Angeles Basin Plan does not include averaging periods for groundwater objectives for these constituents. If the daily maximum averaging period is applied, the Regional Water Board must provide justification as to why a daily maximum averaging period is technically and scientifically valid for these constituents in groundwater rather than a longer averaging period. The basis of the objectives was ambient groundwater conditions at the time the Basin Plan was developed. The basis of the objective was an average of available data at the time the objective was adopted. That approach supports a permit averaging period longer than a daily maximum to correspond to the derivation of the objective. Because the SNMPS are using annual averages for the analyses, and based on the approach used to derive the objectives, we recommend that the daily maximum averaging period be revised to an annual average.

**Commented [A44]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Conditions #1 (Flow) and TOC (#15) that could lead to multiple permit violations for same issue and should be deleted.

**Commented [A45]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 that could unreasonably lead to multiple exceedances for the same issue, and should be deleted. Repetition of the same enforceable requirement could lead to overly aggressive enforcement and artificially elevated penalties. The District understands the Regional Water Board's desire to include the parameters in the table because they also are Basin Plan groundwater objectives; however, those objectives simply incorporated by referenced the MCLs that are already applied to the project via the CDPH Conditions.

**Commented [A46]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #6 that could unreasonably lead to multiple exceedances for same issue and should be deleted. Also Talking Point #6 (Inconsistent with CDPH Regulations). Pathogen log reductions for virus are also achieved through retention time underground and therefore cannot be measured at the discharge point.

**Additional comments are provided in Attachment 9.** CDPH Condition #6 establishes the approach. The Operations Plan will include the monitoring elements to evaluate log reductions in accordance with Section 13.8 of the Engineering Report. Per CDPH requirements, the information on achieving the pathogen reductions must be provided to CDPH on a monthly basis, and will be provided as well to the Regional Water Board. Plus cannot accept TBDs in permit. Delete from this table.

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~~coliform bacteria per 100 mL in more than one sample in any 30-day period prior to injection.~~

~~2.3. The pH of the advanced treated recycled water shall be, at all times, within the range of 6.5 to 8.5 pH units, except during the Vander Lans WTF expansion startup testing, when the pH of the advanced treated recycled water may shall be within the range of 6 to 9 pH units, under specific and necessary operational conditions as defined by the Project Sponsor, for up to one week.~~

~~3. Concentrations of contaminants in the advanced treated recycled water shall not exceed the following MCLs for drinking water:~~

~~a. Primary MCLs specified in California Code of Regulations (CCR), Title 22:~~

- ~~i. Inorganic chemicals in 22 CCR section 64431, Table 64431 A, except for nitrogen compounds;<sup>14</sup>~~
- ~~ii. Radionuclides in 22 CCR sections 64442 and 64443, Table 4;<sup>12</sup>~~
- ~~iii. Regulated organic chemicals in 22 CCR section 64444, Table 64444 A;<sup>13</sup>~~
- ~~iv. Disinfection byproducts in 22 CCR section 64533, Table 64533 A.<sup>14</sup>~~

~~b. Secondary MCLs specified in 22 CCR section 64449, Tables 64449 A and 64449 B.<sup>15</sup> The Corrosivity Index in Table 64449 A is not applicable for 100% recycled water. The Corrosivity Index after adding lime to the recycled water should be within  $\pm 0.5$  Langelier Saturation Index (LSI).~~

~~c. Any new federal or state imposed MCL, upon adoption.~~

~~The MCLs shall be incorporated into this Order prospectively, such that revised or new MCLs shall be enforceable limits under this Order upon their adoption. Compliance with primary MCLs shall be determined on the basis of a running annual average, calculated each quarter using the previous four quarters of data. Compliance with secondary MCLs shall be determined annually based on a representative grab sample or the average of samples collected during the year, if more than one. In case of a violation of either primary or secondary MCLs, the Project Sponsors shall notify and submit a report to the Regional Water Board according to the provisions of this Order.~~

~~4. The total nitrogen effluent limit of 10 mg/L is higher than the 5 mg/L recycled water specification in the previous Order. The effluent limit of 10 mg/L is consistent with CDPH recommendations as describe in their Findings of Fact and Conditions. The increase in the CDPH recommended total nitrogen concentration from 5 mg/L to 10 mg/L is based on recent information about nitrite in drinking water wells. The increase in the effluent limit is also supported by the minimal overall change in the nitrogen concentrations in the Central Basin due to recycling predicted by the SNMP model described in section VII.3 and under development. The local background~~

**Commented [A47]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #18 that could unreasonably lead to multiple exceedances for same issue and should be deleted.

**Commented [A48]:** Based on requested delayed effective date of the Order, this provision is not necessary and should be deleted with regard to the startup testing. Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 regarding pH during full-scale operations that could unreasonably lead to multiple exceedances for same issue and should be deleted. Also, please note that the Regional Water Board's Basin Plan does not contain a numeric pH objective for groundwater. If the pH limit were to stay, we recommend a slightly expanded range (i.e., 6 to 9), based on the experiences of other comparable advanced water treatment facilities that have undergone similar expansions, where the pH of the final recycled water has been shown to fluctuate up to 9 while the treatment processes were being fine-tuned and optimized, which was true especially during the first year of operation. Note that Orange County Water District's barrier permit (Order No. R8-2004-0002 for Interim Water Factory 21 and GWRS) contains a pH limit for recycled water of 6 to 9 pH units.

**Commented [A49]:** Change recommended, per Talking Point #8 (Inconsistent with Previous Approvals) - see Amendment R4-2005-0061-A01.

**Commented [A50]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 that could unreasonably lead to multiple exceedances for same issue and should be deleted.

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<sup>14</sup> See Table M-6 of this Order.  
<sup>12</sup> See Table M-8 of this Order.  
<sup>13</sup> See Table M-9 of this Order.  
<sup>14</sup> See Table M-10 of this Order.  
<sup>15</sup> See Table M-7 of this Order.

~~concentration of total nitrogen in the coastal pressure zone of the Central Basin averages 1.1 mg/L and the maximum groundwater concentration recorded in monitoring wells adjacent to the Barrier between 2007 and 2010 was 2.6 mg/L. Injection of recycled water with total nitrogen concentrations greater than the background level may change local groundwater conditions.~~

**Commented [A51]:** This is not a discharge specification or limit so does not belong in Section III. If desired to keep in, **should move up to Findings with some additional edits as shown in Attachment 7.**

~~Even though the effluent limit has been changed to 10 mg/L to allow more operational flexibility, the Regional Board expects the quality of the groundwater to be optimized (with assistance of the predictive model and confirmatory monitoring) in order to manage any impacts per the SNMP and per antidegradation policy and principles. Additional monitoring, reporting and trend analysis for total nitrogen shall be applied to the monitoring data collected for the Alamitos Barrier Project and contrasted with the water quality changes predicted by model and documented in the first annual report. Should any groundwater monitoring well show an increase in the total nitrogen concentration of 10% over the value predicted by the Project Sponsors in the first annual report, additional studies shall be completed. These may include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the SNMP model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated.~~

**Commented [A52]:** Talking Point #5 (Technically Unsupported Requirements). **Additional comments are provided in Attachment 7.**

~~5-4. The advanced treated recycled water shall not contain taste or odor-producing substances in concentrations that cause nuisance or adversely affect the beneficial uses of the receiving groundwater.~~

**Commented [A53]:** Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #11 regarding MCLs (including secondary MCLs) that could unreasonably lead to multiple exceedances for same issue and should be deleted. Finding 34 explains that this narrative Basin Plan objective is being translated to secondary MCLs. See earlier comment about Finding 34.

~~6-5. Compliance with the effluent limitations recycled water discharge specifications shall be determined after the injection point for sodium hypochlorite and before injection into the Barrier.~~

**Commented [A54]:** Per Talking Point #9 (Permit Treats Project As Disposal of Waste Versus Beneficial Reuse of Recycled Water).

#### IV. **CONDITIONS OF SUCCESSFUL TREATMENT**

~~1. Special Conditions for NDMA: This section of the Order adds additional treatment conditions due to concern about past levels of NDMA discharge and in recognition of the ongoing collaboration between the Project Sponsors and CDPH to maximize the removal of chemicals of emerging concern using the new Advanced Oxidation Process during the implementation of Order R4-2005-0061-A01 through August 31, 2014. The Project Sponsors have operational choices which should allow the achievement of these treatment conditions. The Vander Lans facility can collect data on influent concentrations, treatment, Advanced Oxidation Process performance, and effluent quality so as to better allocate the product water for injection, or wasting to the sewer and even to temporarily halt operations. Treatment Conditions are used here to identify effluent water quality which might affect beneficial uses or exceed water quality objectives and which might be improved using operational or treatment methods. The constituents are not given an effluent limit due to the lack of an MCL; however, the Project Sponsors are directed to describe the reasons for poor results and provide a schedule for completion of corrective actions, allowing iterative treatment modifications in recognition of the value of such investigations in the long term management of chemicals of emerging concern and disinfection byproducts. Historically, sufficient groundwater supplies existed to dilute temporary or local water~~

**Commented [A55]:** Delete IV.1 of this section. Per Talking Point #4 (Unfavorable Depiction of Project), reflects unwarranted negative tone on project based one excursion of NDMA back in 2008. Since then, recycled water has consistently been below the Notification Level (except for one isolated and minimal event that occurred during the first quarter 2013 at 17 ng/L) demonstrating successful treatment at the plant. Advanced oxidation will also provide an additional treatment barrier for NDMA removal. Conditions of Successful Treatment will be demonstrated by meeting all conditions of the permit, not just of this section. Monitoring and compliance for NDMA is already in Monitoring Section IV - 5 and should not be repeated in this part of the permit. **Additional Comments are provided in Attachment 4.**

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~~quality exceedances. In an abundance of caution and because full utilization of all aquifer supplies is being implemented, treatment conditions are used for this recycled water injection project to ensure ongoing improvements in recycled water use and protect future supplies without reliance on dilution.~~

~~Successful operation of the facility is conditional upon attainment of discharge concentrations of NDMA no greater than 10 ng/L. This concentration has been met in 70% of the highly treated recycled water produced by the current treatment practices at the Facility. Five quarterly values higher than 10 ng/L were reported in the earliest half of the reporting period, between 2007 and 2009. The new Advanced Oxidation Treatment Process implemented with this permit is expected to further reduce the NDMA load discharged. After start up testing is completed, the Order may be reopened to establish a new treatment condition or effluent limit, if appropriate, as described in section VII.6.~~

~~Notification of NDMA concentrations above the reporting limit are required, as specified in CDPH's Finding of Fact and Conditions. If the result of 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 Board, with a copy provided to CDPH. If the running four week average is greater than 10 ng/L for sixteen consecutive weeks, the Project Sponsors shall notify CDPH and the Regional Board within 48 hours of knowledge of the exceedance and, if directed by CDPH or the Regional Board, suspend injection of the advanced treated recycled water.~~

Commented [A56]: Per Talking Point #8 (Repetitive Permit Requirements), repeats CDPH Condition #19.

~~Upon an exceedance of 10 ng/L for NDMA in quarterly monitoring samples from groundwater wells, the Project Sponsors shall notify CDPH and the Regional Board and begin monthly sampling of groundwater. The Project Sponsors shall propose a study which shall be completed within a year. During the completion and approval of the study, the Project Sponsors will continue monthly groundwater sampling for NDMA.~~

Commented [A57]: These are monitoring requirements and do not belong under the limitations section. Recommend removal, as they are repeated under the MRP section IV.5.

2. California Department of Public Health Conditions

After a public hearing on June 26, 2013, CDPH finalized and issued its Findings of Fact and Conditions on July 12, 2013, which is attached. CDPH found that, provided that the Project Proponents meet all of the conditions and findings of fact, the Facility can provide injection recharge water that will not degrade the groundwater basins as a source of water supply for domestic purposes. The Conditions are incorporated herein by this reference and are enforceable requirements of this Order.

**V. GENERAL REQUIREMENTS**

1. Recycled water shall not be used for direct human consumption or for the processing

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of food or drink intended for human consumption.

2. Bypass, discharge, or delivery to the use area of inadequately treated recycled water, at any time, is prohibited.
3. The Facility and injection wells shall be adequately protected from inundation and damage by storm flows.
4. Recycled water use or disposal shall not result in earth movement in geologically unstable areas.
5. Odors of sewage origin shall not be perceivable at any time outside the boundary of the Facility.
6. 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).
7. A copy of these requirements shall be maintained at the Facility so as to be available at all times to operating personnel.
8. 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.
9. 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 CDPH (pursuant to Water Code 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.

## VI. ADDITIONAL PROVISIONS

1. Injection of the advanced treated recycled water shall not cause or contribute to an exceedance of water quality objectives in the Central Basin.
2. ~~Start-up Testing: All provisions of this Order shall apply during the start-up testing of the expanded facility. Recycled water which does not, or is not reasonably expected to, attain the limits or conditions specified in this Order shall be wasted through the sewer to the Joint Plant Water Treatment Facility. The Regional Board acknowledges that during the testing process, containment of poor quality water may not be complete, but the Project Sponsors shall document procedures, testing results and monitoring showing a best faith effort to contain test waters which do not comply with the requirements of this Order.~~
3. ~~This Order requires additional monitoring, reporting and trend analysis to determine~~

**Commented [A58]:** Since the treatment plant expansion will not be completed until Fall 2014 and startup testing is ongoing, WRD requests that the effective date of the permit be **October 1, 2014** rather than upon adoption of this Order. This will allow a coordinated transition for implementation of the new provisions in the Order (for example full-scale AOP will not be in place until after construction and startup are completed), including the monitoring provisions. Based on our request for a delayed effective date, there is no need for this provision in the Order. If the Regional Water Board refuses to revise the effective date, then a provision must be added exempting WRD from those parts of the permit that can only be met after construction and startup are complete.

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~~actual localized impacts to groundwater. The Project Sponsors shall use the local Alamitos Barrier model, or other appropriate tool, to predict the change in the total nitrogen concentration at the wells adjacent to the barrier in a manner which is consistent with the long term projections of the SNMP model. The predicted water quality changes will be submitted as part of the first annual report required after adoption of this Order. A 10% change in the water quality sampled at any of groundwater monitoring wells in Table M-20, over that predicted in the Project Sponsors' first annual report and approved by the Executive Officer, shall trigger further analysis to be included in each subsequent annual report. These studies shall include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the SNMP model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated. A reopener clause is provided in section VII.~~

4-3. Groundwater Well Replacement: Replacement or addition of injection wells to the Alamitos 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, WRD submits, in writing, the purpose, design, and location of the well to CDPH and the Regional Water Board;
- c. the Regional Water Board, in consultation with CDPH, approves the location of the additional well;<sup>16</sup> and
- d. within 90 days after the installation or replacement of the well, WRD submits, in writing, the complete geologic and electrical logs and as-built construction diagrams of the injection wells to CDPH and the Regional Water Board.

5-4. 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.

6-5. The Project Sponsors shall notify this Regional Water Board and CDPH by telephone or electronic means within 24 hours of knowledge of any violations of this Order or any adverse conditions as a result of the use of recycled water from this facility; written confirmation shall follow within 5 working days from date of notification. The report shall include, but not be limited to, the following information, as appropriate:

- a. The nature and extent of the violation;

<sup>16</sup> If the Regional Board fails to approve or deny the proposed construction within thirty days of receipt of the proposal, the proposal shall be deemed approved. The new OCWD wells described in the CDPH Findings of Fact are exempt from this requirement. [Comment: the Regional Water Board agreed to this exemption per earlier meetings regarding the January 2014 tentative Order]

Commented [A59]: Deletion recommended per Talking Point #5 (Technically Unsupported Requirement). The requirement that the annual report be "approved by the Executive Officer" is confusing and sets a new precedent on how annual informational reports are handled by the RWQCB. Please refer to Attachment 7 for additional information on Nitrogen and the relevance of the 10% change above what would be predicted by the SNMP mixing model.

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- 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.

~~7-6.~~ 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.

~~8-7.~~ 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.

~~9-8.~~ 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.

~~10-9.~~ The Project Sponsors shall furnish, within a reasonable time, any information the Regional Water Board or CDPH may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Project Sponsors shall also furnish the Regional Water Board, upon request, with copies of records required to be kept under this Order for at least three years.

~~11-10.~~ 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.

~~12-11.~~ This Order includes the attached *Standard Provisions Applicable to Waste*

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*Discharge Requirements.* If there is any conflict between the provisions stated in this Order and the Standard Provisions, the provisions stated in this Order shall prevail.

~~13.12.~~ This Order includes the attached MRP No. CI-8956. If there is any conflict between provisions stated in the MRP and the Standard Provisions, those provisions stated in the MRP prevail.

## VII. 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, anti-degradation 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 which show reasonable potential to cause or contribute to an exceedance of a Basin Plan water quality objective or degradation of high quality water inconsistent with the Anti-degradation Policy to protect beneficial uses, based on additional data new information not available at the time this Order was adopted.~~

~~2.3.~~ Upon completion and adoption of the Salt and Nutrient Management Plan, or 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, policies and regulations.

~~3.4.~~ 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, including the CDPH Groundwater Replenishment Regulations to be adopted effective June 30, 2014.

~~4.5.~~ This Order may be reopened upon a determination by CDPH that treatment and disinfection of the Vander Lans WTF recycled water is not sufficient to protect human health, or upon completion of startup testing regarding operation of the AOP system to incorporate operational or water quality limits as necessary, to ensure the inactivation of viruses in the recycled water.

~~5.6.~~ This Order may be reopened upon completion of start up tests for the expanded facility and submission of the test results to the CDPH and the Regional Water Board to include terms and conditions necessary to protect high quality groundwater.

## VIII. ENFORCEMENT

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).

Commented [A60]: Talking Point #10 (Impending Statewide Change in Potable Water Reuse Permitting). **Additional comments are provided in Attachment 5.**

Commented [A61]: This language is not appropriate for this type of project as it is used for NPDES permits. Recommend replacing with language consistent with Water Code section 13263.

Commented [A62]: Suggestions for clarity.

Commented [A63]: Talking Point #10 (Impending Statewide Change in Potable Water Reuse Permitting). **Additional comments are provided in Attachment 5.**

Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) for pathogen control. **Additional comments are provided in Attachment 9.**

Commented [A64]: Per Talking Point #8 (Repetitive Permit Requirements), repeats VII.5

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**IX. EFFECTIVE DATE OF THE ORDER**

This Order takes effect ~~upon its adoption on (date to be added).~~ Until then, this Project is regulated under Order No. R4-2005-0061 as amended by WQ-2006-0001 and Order No. R4-2005-0061-A01.

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 June 5, 2014.

\_\_\_\_\_  
Samuel Unger, P.E.  
Executive Officer

**Commented [A65]:** WRD requests that the Permit become effective on October 1, 2014, which is the date that the full-scale operation of the expanded LVLWTF is expected go online and would allow the Project Sponsors to fully comply with the Permit requirements. If the Order takes effect upon adoption (or earlier than October 1<sup>st</sup>), the Project Sponsors risk violation of the following Permit provisions:

CDPH Conditions – Treatment specifications (2, 3, 4, and 5); validation of pathogen reduction (6 and 7); TOC online analyzer monitoring (17); and operating at peak performance (21).

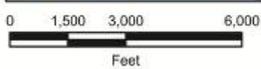
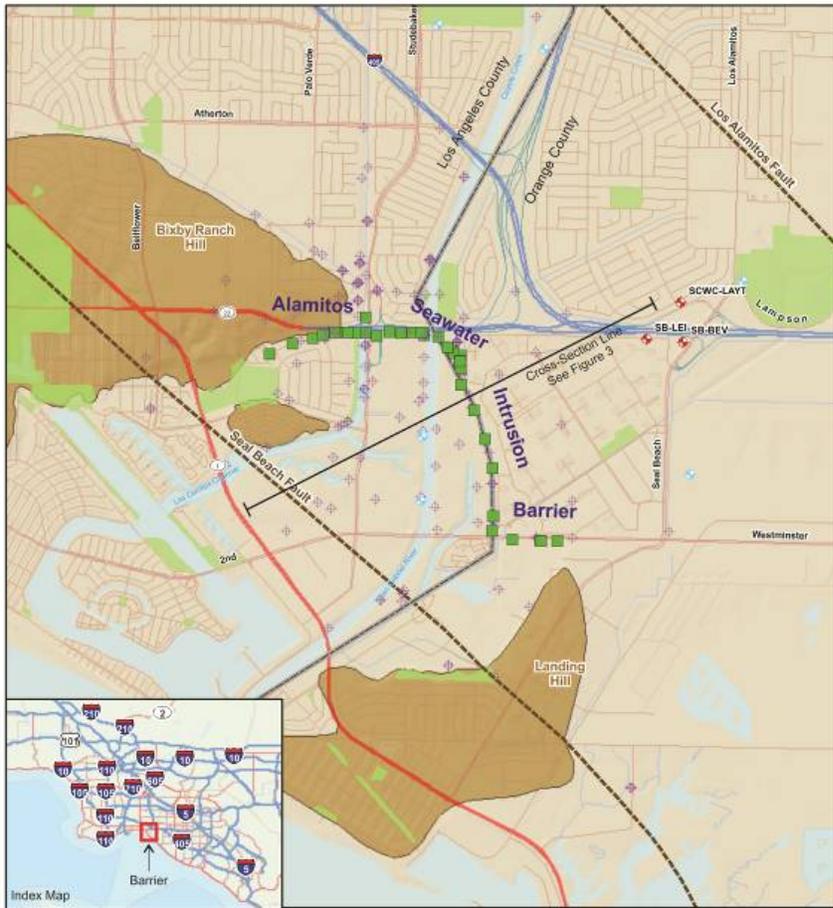
Regional Water Board's Requirements:  
II (Recycled water treatment specification); IV.2 (CDPH conditions), and

MRP - Continuous monitoring for conductivity and TOC using online analyzers upstream and downstream of RO (IV.2.C.iii); AOP measurements (IV.2.C.iv); calculation of pathogenic microorganism log reduction achieved each day (IV.2.C.v); and tabulation of monitoring results that do not meet the surrogate limits established to assure proper performance of RO/AOP (IV.2.D.iv)

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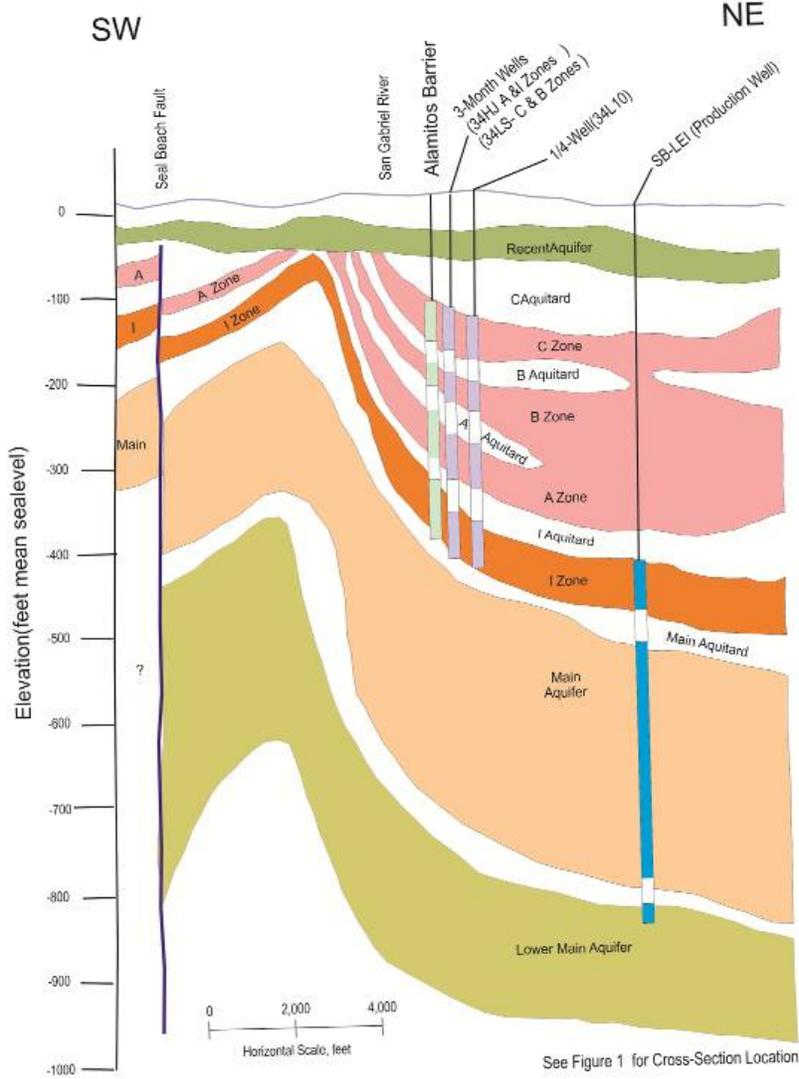
FIGURE 1 – LOCATION OF ALAMITOS SEAWATER INJECTION BARRIER



**Alamitos Barrier location map.**  
 Alamitos Barrier Modeling Project

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FIGURE 2- CROSS SECTION OF WELL INJECTION FIELD



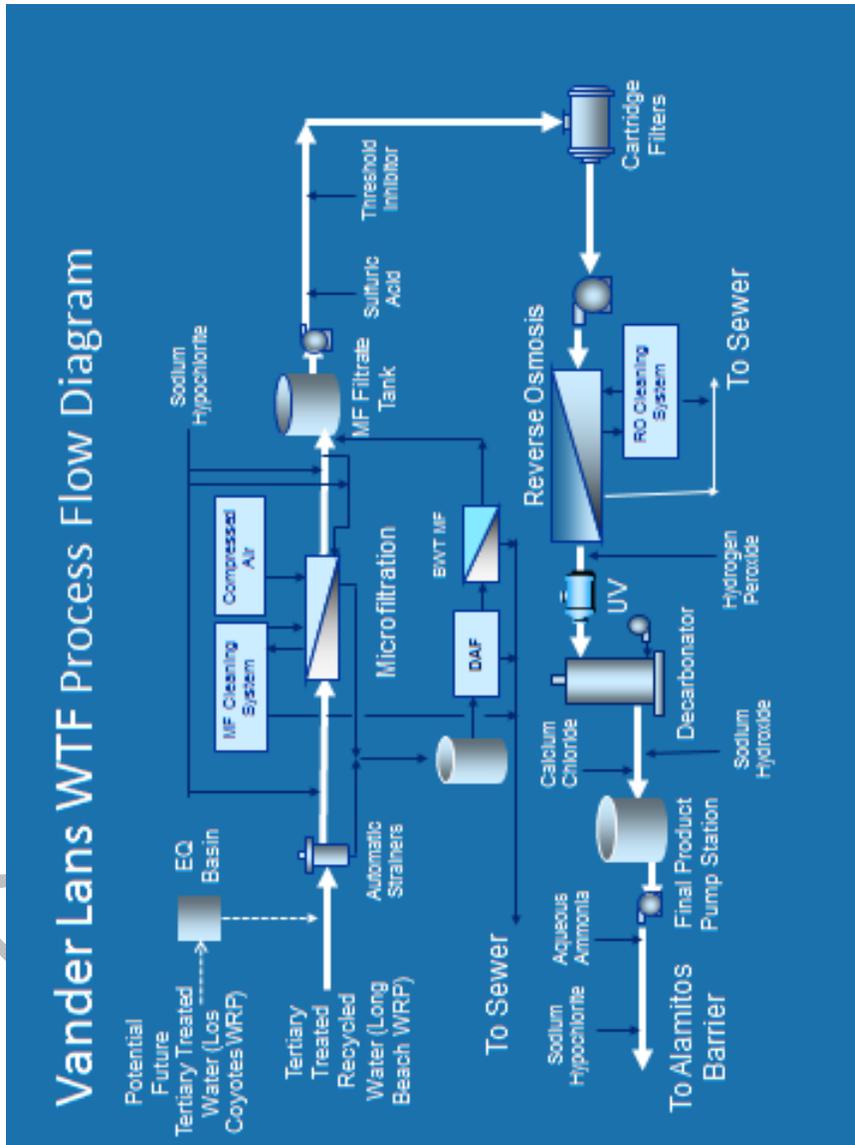
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FIGURE 3 – Leo J. Vander Lans Water Treatment Facility



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FIGURE 4- PROCESS FLOW DIAGRAM



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FIGURE 5: SIMULATED RECYCLED WATER FRACTION IN ZONE I

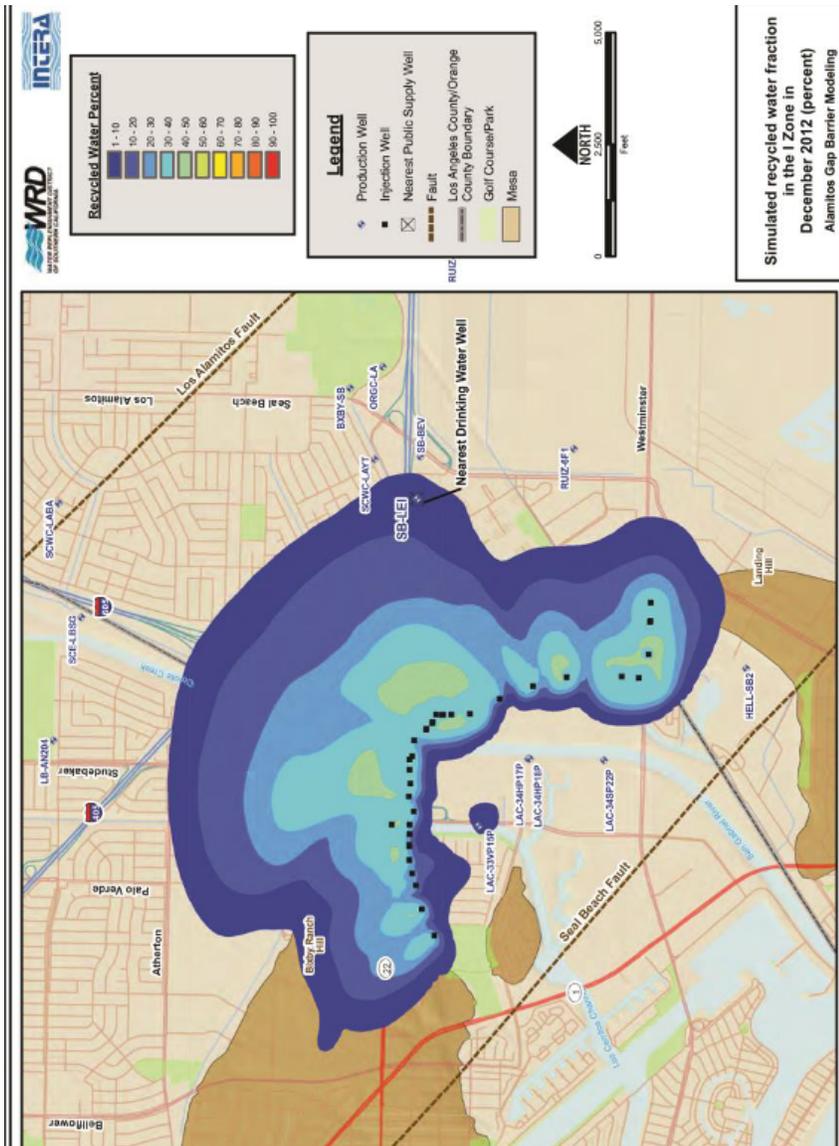
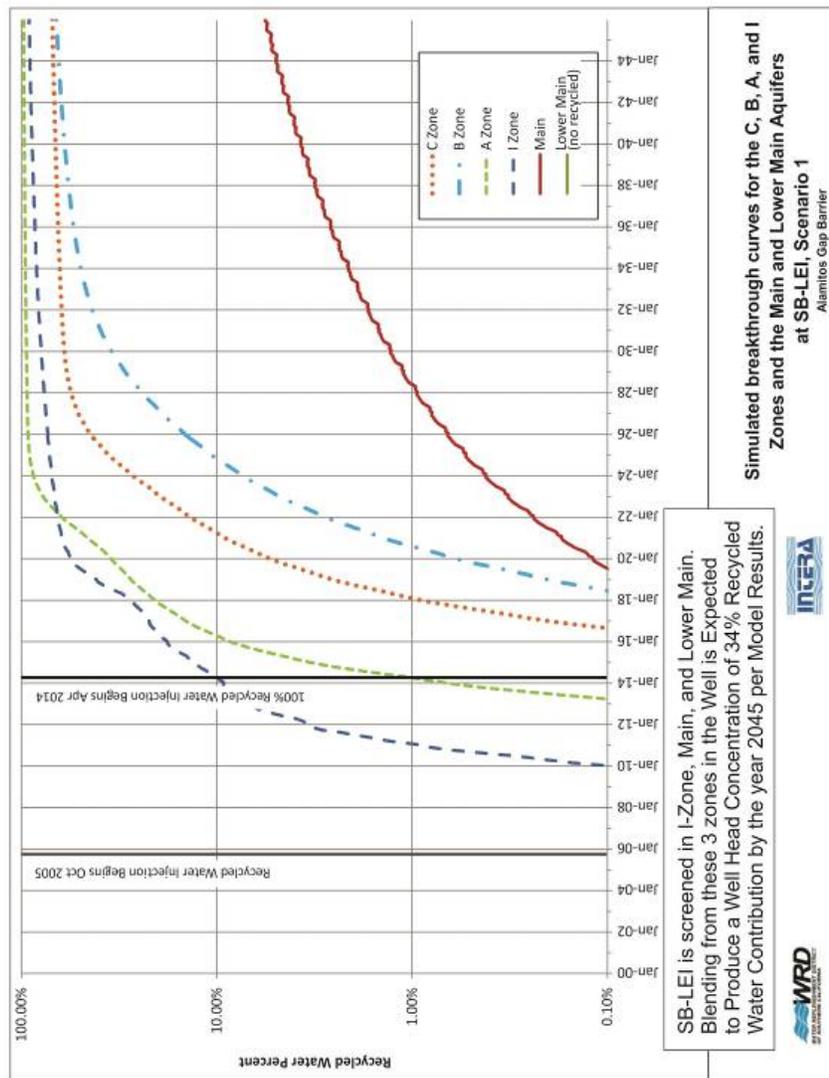


FIGURE 6 – PREDICTED RECYCLED WATER CONCENTRATIONS IN AQUIFERS AT NEAREST DRINKING WATER WELL WITH 100% RECYCLED WATER INJECTION



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

ORDER NO. R4-2014-XXX

MONITORING AND REPORTING PROGRAM NO. CI-8956  
FOR THE  
ALAMITOS BARRIER RECYCLED WATER PROJECT  
(File No. 93-076)

ISSUED TO

Los Angeles County Department of Public Works  
Water Replenishment District of Southern California

The Los Angeles County Department of Public Works (Los Angeles County DPW) and the Water Replenishment District of Southern California (WRD) collectively referred to as Project Sponsors, shall implement this Monitoring and Reporting Program (MRP) on the first of the month following the month this Order was adopted.

I. SUBMITTAL OF REPORTS

1. The Project Sponsors shall submit the required reports, outlined in the following paragraphs, to the State Water Resources Control Board (State Water Board)'s Geotracker database and to the California Department of Public Health (CDPH), Drinking Water Field Operations, Los Angeles Region by the dates indicated (Effective July 1, 2014, the State Water Board Division of Drinking Water shall be substituted in place of every reference to CDPH in the conditions and requirements of this Order, and in the findings of this Order where appropriate.)
  - a. Quarterly Monitoring: Quarterly Monitoring Reports shall be received by the 15<sup>th</sup> day of the second month following the end of each quarterly monitoring period according to Table M-1.

Commented [A66]: Clarification added for factual accuracy.

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, recycled water effluent, and groundwater monitoring results, since the last report. Where monitoring has been reduced

Commented [A67]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).

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to semi-annually or annually, a similar summary shall be provided for the constituents on the applicable report.

- b. Annual Summary: The Annual Summary Report shall be received by April 15 of each year. This Annual Summary Report shall contain a discussion of the previous calendar year's analytical results, as well as graphical and tabular summaries of the monitoring analytical data. The contents of the Geotracker Annual Monitoring Report shall include a one page summary describing additional monitoring, reporting and trend analysis, which may be required as described in MRP section III.2.

Public water systems, owners of small water systems and other active production wells having downgradient 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. Leo J. Vander Lans Water Treatment Facility (Vander Lans WTF or Facility) Vander Lans WTF Operation Plan: Prior to startup of the expanded Vander Lans WTF, the Project Sponsors shall submit an Operations Plan to CDPH and the Regional Water Board for approval. After six months of operation of the expanded Leo J. Vander Lans Water Treatment Facility, the Operations Plan shall be updated as necessary and submitted to the Regional Water Board and the CDPH for review and approval.

- i. The Operations Plan shall cover critical operational parameters to include routine testing procedures for the microfiltration (MF), reverse osmosis (RO), and ultraviolet (UV)/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 Vander Lans WTF, 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 Vander Lans WTF, all treatment processes shall be operated in a manner to provide optimal reduction of microbial, regulated and nonregulated contaminants. Based on this experience and anytime operational changes are made, the Operations Plan shall be updated.

- ii. The Operations 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 the CDPH and Regional Water Board. Significant changes in the approved Operations Plan must be approved by the CDPH and the Regional Water Board prior to instituting changes. The Project Sponsors shall be responsible for ensuring that the Operations Plan is, at all times, representative of the current operations, maintenance, and monitoring of

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the Vander Lans WTF.

- d. Five-Year Engineering Report: Project Sponsors shall update the 2013 Title 22 Engineering Report and submit the updated report to the State Water Board's Geotracker and the CDPH five years after the startup of the expanded Vander Lans WTF, and every five years thereafter.
2. All reports to the State Water Board's Geotracker shall reference the Compliance File No. CI-8956. Compliance monitoring reports shall be submitted separately from other technical reports.
3. All reports shall be submitted as a pdf file and uploaded electronically to the State Water Board's Geotracker and provided via email to the CDPH (if the file exceeds 10 MB, either a CD containing the file shall be mailed to CDPH, ~~Attention: CDPH, Drinking Water Field Operations, Los Angeles Region~~, or a link for downloading an electronic copy of the file shall be provided). Upon request the data shall be provided in excel format
4. By the reporting due dates specified in Table M1, groundwater data shall be uploaded electronically to the State Water Board's Geotracker in an electronic deliverable format specified by the State Water Board. Upon request the data shall be provided in excel format

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## II. MONITORING REQUIREMENTS

1. 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 Vander Lans WTF;
  - b. ~~Effluent (Recycled water)~~ from Vander Lans WTF after the injection point for sodium hypochlorite and before injection into the Barrier
  - c. If potable water is used, blend of recycled water and diluent water; and,
  - d. Receiving groundwater (monitoring wells specified in Table M-18).
  - e. For the production well SB-LEI (State Well No. 05S/12W-01A03) nearest to the barrier, the Project Sponsors shall review and evaluate the publicly available Title 22 monitoring data.
  - f. ~~The Project Sponsors shall collect and review total nitrogen data from the monitoring wells specified in Table M-18 on a quarterly basis.~~
2. Monitoring reports shall include, but not limited to, the following:
  - a. Analytical results;

Commented [A68]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water)

Commented [A69]: Talking Point #5 (Technically Unsupported Requirement); also comment associated with Table M-18.

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- 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, which conducted the analyses;
  - e. Copy of laboratory certifications by the CDPH's Environmental Laboratory Accreditation Program (ELAP); and,
  - f. Quality assurance and control information, including documentation of chain of custody.
  - g. Permit limitspecification, maximum contaminant level (MCL) or notification level, or recycled water, pretreatment specification or treatment condition.
3. Though not required to be included in the monitoring reports unless specifically requested by the Regional Water Board or the CDPH, 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. Where multiple EPA approved methods are available, drinking water (500 series) or waste-water (600 series) may be used and as appropriate to protect water quality and beneficial uses.
  5. The samples shall be analyzed using analytical methods described in 40 Code of Federal Regulations (CFR) Part 141; or where no methods are specified for a given pollutant, by methods approved by the CDPH, Regional Water Board and/or 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. 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, except as stated in section III.1.B of this MRP.
  7. Upon request by the Project Sponsors, the Regional Water Board, in consultation

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with the CDPH 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 141;
  - b. When the method under 40 CFR 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.
8. For regulated constituents, the laboratory conducting the analyses shall be certified by ELAP or approved by the CDPH, Regional Water Board, or State Water Board, for a particular pollutant or parameter.
9. Samples shall be analyzed within allowable holding time limits as specified in 40 CFR Part 141. All Quality Assurance/Quality Control (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 the CDPH. Proper chain of custody procedures shall be followed, and a copy of this documentation shall be submitted with the quarterly report.
10. 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.
11. Quarterly monitoring for recycled water effluent and groundwater shall be performed during the months of February, May, August, and November. Semiannual monitoring for recycled water effluent 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.
12. For unregulated chemical analyses, the Project Sponsors shall select methods according to the following approach:
- a. Use the drinking water methods or waste water method sufficient to evaluate all water quality objectives and protect all beneficial uses;
  - b. Use CDPH-recommended methods for unregulated chemicals, if available;
  - c. If there is no CDPH-recommended drinking water method for a chemical, and more than a single United States Environmental Protection Agency (USEPA)-

Commented [A70]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).

Commented [A71]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).

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approved method is available, use the most sensitive of the USEPA-approved methods;

- 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 CDPH, use the most sensitive method;
- 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 CDPH for review. Those methods may be used until CDPH-recommended or USEPA-approved methods are available.
- f. For constituents of emerging concern (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 RLs 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 the CDPH, or peer review reviewed and published methods that have been reviewed by CDPH, 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 CDPH and subsequently submitted to the Regional Water Board in an updated quality assurance project plan.

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### III. REPORTING REQUIREMENTS

#### 1. Quarterly Reports

- a. These reports shall include, at a minimum, the following information:
  - i. The 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 Alamitos Gap Seawater Intrusion Barrier (Barrier) during the quarter/month, the report shall so state.
  - ii. The date and time of sampling and analyses.
  - iii. 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.
  - iv. 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.
  - v. Discussion of compliance, noncompliance, or violation of requirements.

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- vi. All corrective or preventive action(s) taken or planned with schedule of implementation, if any.
  - vii. Certification by the Project Sponsors 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.
  - viii. A summary of operational concerns describing changes in reporting conditions, including influent, recycled water effluent, and groundwater monitoring results, since the last report.
- b. Verification of compliance with the 20 week running average Total Organic Carbon (TOC) limit, presented in numerical and graphical formats.
- ~~e. Verification of compliance with the UV Power level recycled water minimum treatment requirements, presented in numerical and graphical formats~~
- ~~d. Verification of compliance with the Hydrogen Peroxide concentration and injection rate, presented in numerical and graphical formats~~
- ~~e-c. Verification of compliance with the MCLs for drinking water as listed in Order section III.4 and Tables M-6, M-7, M-8, M-9, M-9, M-10, M-11, M-12 and M-13, presented in numerical and graphical formats~~
- f-d. Monitoring results associated with the evaluation of pathogenic microorganism removal as described in Order section III.2 of this MRP.
- g-e. For the purpose of reporting compliance with numerical limitations, analytical data shall be reported using the following reporting protocols:
- i. 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
  - ii. 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”, or “J”. The laboratory shall write the estimated chemical concentration of the sample next to “DNQ” or “J”; or
  - iii. Sample results less than the laboratory’s MDL shall be reported as “Not-Detected”, or ND.
- h-f. 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

**Commented [A72]:** Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).

**Commented [A73]:** Talking Point #8 (Repetitive Permit Requirements) that are already included in other provisions. Graphical reporting requirement for quarterly reporting is new (not in the existing Order) and excessive, without a corresponding benefit (required as part of annual report) – Recommend deletion.

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with average recycled water effluent, receiving water, etc., limitations.

Commented [A74]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Use of Recycled Water).

g. The Regional Water Board or CDPH may request supporting documentation, such as daily logs of operations.

2. Annual Summary Reports shall include, at a minimum, the following information:

- a. Tabular and graphical summaries of the monitoring data obtained during the previous calendar year;
- b. A summary of compliance status with the applicable monitoring requirements during the previous calendar year;
- c. 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 surface application of recycled municipal waste water resulting from a violation; and
  - iii. if uncorrected, a schedule for and summary of all remedial actions;
- d. Any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells (and if applicable, in diluent water supplies);
- e. Information pertaining to the vertical and horizontal migration of the recharge water plume;
- f. Title 22 drinking water quality data for the nearest domestic water supply well SB-LE1;
- g. A description of any changes in the operation of any unit processes or facilities;
- h. the estimated quantity and quality of the recycled municipal waste water and diluent water to be utilized for the next calendar year;
- i. A summary of the measures taken by the County Sanitation Districts of Los Angeles County (County Sanitation Districts) CSDLAC to comply with wastewater source control program and the effectiveness of the implementation of the measures;
- j. 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;

Commented [A75]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

Commented [A76]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

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- k. A list of current operating personnel, their responsibilities, and their corresponding grade of certification; and
  - l. The Annual Report shall be prepared by a properly qualified engineer registered and licensed in California and experienced in the field of wastewater treatment.
  - m. A one page summary on additional monitoring, reporting and trend analysis, which may be required as described in MRP section IV.5.
3. The existing Operations Plan shall be updated to accurately reflect: the operations of the expanded Vander Lans WTF's, the date the plan was last reviewed, and whether the plan is valid and current.
- ~~4. Five Year Engineering Report: Five years after the startup of the expanded Vander Lans WTF and every five years thereafter, the Project Sponsors shall update the engineering report to address any project changes and submit the report to the Regional Water Board and the CDPH. The Five Year Engineering Report Update shall include, but not be limited to:~~
- a. ~~Evidence that the requirements associated with retention time have been met (Note: This may be done using past tracer studies.); and~~
  - b. A description of any inconsistencies between previous groundwater model predictions and the observed and/or measured values. For this requirement, the Project Sponsors shall summarize the groundwater flow and transport including the injection and extraction operations for the Barrier during the previous five calendar years. 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:
    - i. Total quantity of water injected into each major aquifer, and the proportions of recycled water and diluent water that comprise the total quantity;
    - ii. Estimates of the rate and path of flow of the injected water within each major aquifer;
    - iii. Projections of the arrival time of the recycled water at the closest extraction well (SB-LEI), and the percent of recycled water at the wellhead.
    - iv. Clear presentation on any assumptions and/or calculations used for determining the rates of flow and for projecting arrival times and dilution levels.

**Commented [A77]:** Talking Point #8 (Repetitive Permit Requirements) that are already included in other provisions. Recommend removal.

**Commented [A78]:** Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #2: A numerical model and tracer study has been completed, whose results verified the retention and response time is adequate prior to the recycled water reaching the nearest domestic water supply well.

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- v. 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.
- vi. A revised flow and transport model to match actual flow patterns observed within the aquifer if the flow paths have significantly changed.
- vii. Revised estimates, if applicable, on hydrogeologic conditions including the retention time and the amount of the recycled water in the aquifers and at the production well field 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 if applicable portable water), hydrostatic head values, groundwater production rates, basin storage changes, and any other data needed to revise the estimates of the retention time and the amount of the recycled water in the aquifers and at the production well field. Significant differences, and the reasons for such differences, between the estimates presented in the 2013 Engineering Report and subsequently revised estimates, shall be clearly presented. Additionally, the Project Sponsors shall use the most recently available data 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.
- c. Evaluation of the ability of Project Sponsors to comply with all regulations and provisions over the following five years.
- d. 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.

Commented [A79]: Talking Point #5 (Technically Unsupported Requirement). This is an additional, unnecessary requirement, not in the existing Order.

#### IV. MONITORING PROGRAMS

- 1. Influent Pre-Treatment Specifications Monitoring
  - a. Monitoring is required to determine compliance with water quality conditions and standards; and assess Vander Lans WTF performance.
  - b. The influent sampling station is located before tertiary treated water from the Long Beach Water Reclamation Plant (WRP) (and if applicable, from Los Coyotes WRP) enters the MF treatment system of the Vander Lans WTF. Influent samples shall be obtained on the same day that effluent recycled water samples are obtained. The date and time of sampling shall be reported with the analytical values determined. Table M-2 constitutes the pretreatment specifications-influent monitoring program.

Commented [A80]: Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

Commented [A81]: Changes made, to be consistent with the existing Order.

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**Table M-2: ~~Pre-Treatment Specifications Influent Monitoring~~**

Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Total flow	mgd	Recorder	Continuous <sup>17</sup>
Total suspended solids (TSS)	mg/L	24-hour comp.	Daily
Biological Oxygen Demand <sub>5</sub> 20°C	mg/L	24-hour comp.	Weekly

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2. Recycled Water ~~Treatment Specifications Monitoring~~

a. Recycled water ~~treatment specifications~~ monitoring is required to:

- i. Determine compliance with the Permit conditions;
- ii. Identify operational problems and aid in improving facility performance; and,
- iii. Provide information on ~~wastewater recycled water~~ characteristics and flows for use in interpreting water quality and biological data (see Table M-3).
- iv. ~~Determine if effluent limits are attained..~~

~~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.~~

**Commented [A82]:** Per the comment on Order I.2 a and b: The 15 mg/L BOD and TSS conditions listed have no regulatory basis for water reclamation treatment. Neither Title 22 nor the CDPH Draft Groundwater Replenishment Regulations define what constitutes adequate oxidation. Metcalf & Eddy reports that BOD and TSS following activated sludge treatment with nitrification can be 25 mg/L for each parameter. [Metcalf & Eddy, 2007, *Water reuse issues, technologies, and applications*. New York, NY: McGraw Hill.]

The requirements are not even consistent with the discharge limits for the Long Beach and Los Coyotes WRPs NPDES permits where the monthly BOD limits are 20 mg/L; the TSS monthly limits are 15 mg/L. Limits for BOD and TSS in these permits are more stringent than federally mandated technically based limits and therefore represent conditions beyond what is considered to be "adequately oxidized."

The addition of these requirements presents added compliance liability, which is fully addressed as part of the Long Beach and Los Coyotes NPDES permits. We therefore recommend that they be deleted.

**Commented [A83]:** Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

**Commented [A84]:** Talking Point #8 (Repetitive Permit Requirements) - encompassed in 2.a.i.

**Commented [A85]:** Talking Point #8 (Repetitive Permit Requirements) - already included in subsection c "Evaluation of Pathogenic Microorganism Removal" on MRP-18.

**Table M-3 – Recycled Water Treatment Specifications**

Parameter	Unit	Frequency
UV power level	%	TBD <sup>18</sup>
Hydrogen Peroxide	ml/min	TBD
Hydrogen Peroxide	mg/L	TBD

3. ~~Effluent Monitoring~~

<sup>17</sup> For those constituents that are continuously monitored, the Project Sponsors shall report the monthly minimum and maximum, and daily average values.

<sup>18</sup> TBD: The CDPH will determine the treatment indicators and frequency of monitoring that which demonstrate sufficient inactivation of viruses after the pilot test is completed and the results evaluated. Values based on the design removal described in the CDPH conditions will be used if the values are not determined within a year of adoption.

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- a. ~~Highly treated recycled water monitoring is required to:~~
- ~~i. Determine compliance with the Permit conditions;~~
  - ~~ii. Identify operational problems and aid in improving facility performance;~~
  - ~~iii. Provide information on recycled wastewater characteristics and flows for use in interpreting water quality and biological data; and~~
  - ~~iv. Determine if effluent limits are attained.~~

**Commented [A86]:** Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

Samples shall be collected from the channel downstream of the sodium hypochlorite injection point, with the exception of ~~constituents specified in Tables M-14 and M-15~~ **Chemicals of Emerging Concern (CEC) s and surrogates, whose sampling locations are determined by the State Water Board's Recycled Water Policy, amended on January 22, 2013. The amendment to the Recycled Water Policy Attachment A states that the effluent shall be sampled for the constituents in Table M-4.** 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.

**Table M-4 – Sampling of Constituents of Emerging Concern**

Parameter	Constituent Group	Reporting Limit (µg/L)
17β-estradiol	Steroid Hormones	.001
Caffeine	Stimulant	.05
NDMA	Disinfection Byproduct	.002
Triclosan	Antimicrobial	.05
DEET	Personal Care Product	.05
Sucralose	Food additive	.1

- b. Table M-5 shall constitute the ~~effluent~~ **recycled water** monitoring program.

**Commented [A87]:** Talking Point #8 (Repetitive Permit Requirements) leads to confusion. The requirements pertaining to CECs and corresponding surrogates appear later in the MRP in Tables M-14 and M-15, and therefore, recommend removal to avoid confusion.

**Table M-5: ~~Recycled~~ **Recycled Water Discharge Specifications** ~~Effluent~~ **Monitoring****

Constituent/Parameters	Units	Type of Sample	Minimum Frequency of Analysis <sup>19</sup>
Total recycled water flow	mgd	Recorder	Continuous
pH	pH units	Recorder	Continuous
Total coliform	MPN/100 ml	Grab	Daily

**Commented [A88]:** Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

**Commented [A89]:** Talking Point #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water).

<sup>19</sup> For those constituents that are continuously monitored, the Project Sponsors shall report the monthly minimum and maximum, and daily average values.  
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Enteric virus	Log	Calculated	Weekly
Giardia	Log	Calculated	Daily
Cryptosporidium	Log	Calculated	Daily
TOC	mg/L	24-hour comp. or grab	Weekly
BOD <sub>5</sub> 20°C	mg/L	24-hour comp.	Weekly
Turbidity	NPU	24-hour comp.	Weekly
Total nitrogen <sup>20</sup>	mg/L	24-hour comp 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
Inorganics <sup>21</sup> with primary MCLs	µg/L	Grab	Quarterly
Constituents/parameters with secondary MCL	various	Grab	Quarterly
Fluoride	µg/L	Grab	Quarterly
Radioactivity	pCi/L	Grab	Quarterly
Regulated organic chemicals	µg/L	24-hour comp or grab	Quarterly
Disinfection byproducts	µg/L	24-hour comp or grab	Quarterly
General physical	various	Grab	Quarterly
General minerals	µg/L	Grab	Quarterly
Lead	µg/L	Grab	Quarterly
Copper	µg/L	Grab	Quarterly
Constituents with Notification Levels	µg/L	Grab	Varies <sup>33</sup>
Remaining priority pollutants <sup>33</sup>	µg/L	Grab	Annually
Constituents of Emerging Concern (CECs)	ng/L	Grab	Varies

Commented [A90]: Talking Point #6 (Inconsistent with CDPH GWR Regulations). The log reductions include treatment as well as underground retention time. The appropriate monitoring requirements are presented in 3.c.

Commented [A91]: Talking Point #5 (Technically Unsupported Requirement). Not a CDPH requirement, not part of the existing Order. These are covered under MCL monitoring. Recommend deletion.

Commented [A92]: Talking Point #8 (Repetitive Permit Requirements), already covered under inorganic primary MCLs, same monitoring frequency. Recommend deletion.

**Table M-6: Inorganics with Primary MCLs**

Constituents		
Aluminum	Cadmium	Nitrate (as nitrogen)
Antimony	Chromium (Total)	Nitrite (as nitrogen)
Arsenic	Cyanide	Nitrate + Nitrite

<sup>20</sup> Total Nitrogen includes nitrate-N, nitrite-N, ammonia-N, and organic-N.

<sup>21</sup> For specific constituents to be monitored and their monitoring frequency, refer to Tables M-5 through M-13.

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<b>Table M-6: Inorganics with Primary MCLs</b>		
Asbestos	Fluoride	Perchlorate
Barium	Mercury	Selenium
Beryllium	Nickel	Thallium

<b>Table M-7: Constituents/parameters with secondary MCLs</b>		
<b>Constituents</b>		
Aluminum	Manganese	Thiobencarb
Chloride	Methyl-tert-butyl-ether (MTBE)	Total Dissolved Solids
Color	Odor – Threshold	Turbidity
Copper	Silver	Zinc
Foam Agents (MBAS)	Specific Conductance	
Iron	Sulfate	

<b>Table M-8: Radioactivity</b>		
<b>Constituent</b>		
Gross Alpha Particle Activity (Including Radium-226 but Excluding Radon and Uranium)	Combined Radium-226 and Radium-228	Tritium
Gross Beta Particle Activity	Strontium-90	Uranium

<b>Table M-9: Regulated Organics</b>		
<b>Constituents</b>		
<b>(a) Volatile Organic Chemicals</b>	1,1,1-Trichloroethane	Endothal
Benzene	1,1,2-Trichloroethane	Endrin
Carbon Tetrachloride (CTC)	Trichloroethylene (TCE)	Ethylene Dibromide (EDB)
1,2-Dichlorobenzene	Trichlorofluoromethane	Glyphosate
1,4-Dichlorobenzene	1,1,2-Trichloro-1,2,2-Trifluoroethane	Heptachlor
1,1-Dichloroethane	Vinyl Chloride	Heptachlor Epoxide
1,2-Dichloroethane (1,2-	Xylenes (m,p)	Hexachlorobenzene

<b>Table M-9: Regulated Organics</b>		
DCA)		
1,1-Dichloroethene (1,1-DCE)	<b>(b) Non-Volatile synthetic Organic Constituents</b>	Hexachlorocyclopentadiene
Cis-1,2-Dichloroethylene	Alachlor	Lindane
Trans-1,2-Dichloroethylene	Atrazine	Methoxychlor
Dichloromethane	Bentazon	Molinate
1,2-Dichloropropane	Benzo(a)pyrene	Oxamyl
1,3-Dichloropropene	Carbofuran	Pentachlorophenol
Ethylbenzene	Chlordane	Picloram
Methyl-tert-butyl-ether (MTBE)	Dalapon	Polychlorinated Biphenyls
Monochlorobenzene	1,2-Dibromo-3-chloropropane (DBCP)	Simazine
Styrene	2,4-Dichlorophenoxyacetic acid (2,4-D)	Thiobencarb
1,1,2,2-Tetrachloroethane	Di(2-ethylhexyl)adipate	Toxaphene
Tetrachloroethylene (PCE)	Di(2-ethylhexyl)phthalate	2,3,7,8-TCDD (Dioxin)
Toluene	Dinoseb	2,4,5-TP (Silvex)
1,2,4-Trichlorobenzene	Diquat	

<b>Table M-10: Disinfection Byproducts</b>		
<b>Constituent</b>		
<b>Total Trihalomethanes (TTHM)</b>	<b>Haloacetic Acid (five) (HAA5)</b>	Bromate
Bromodichloromethane	Monochloroacetic acid	Chlorite
Bromoform	Dichloroacetic acid	
Chloroform	Trichloroacetic acid	
Dibromochloromethane	Monobromoacetic acid	
	Dibromoacetic acid	

<b>Table M-11: General Physical and General Minerals Constituents</b>		
Asbestos	Potassium	Foaming Agents
Calcium	Sodium	Odor
Chloride	Sulfate	Specific Conductance

Table M-11: General Physical and General Minerals		
Constituents		
Copper	Zinc	Total Dissolved Solids
Iron	Color	Total Hardness
Manganese	Corrosivity	

Table M-12: Constituents with Notification Levels			
Constituents	Units	Type of Sample	Minimum Frequency of Analysis
Boron	µg/L	Grab	Quarterly
n-Butylbenzene	µg/L	Grab	Annually
sec-Butylbenzene	µg/L	Grab	Annually
tert-Butylbenzene	µg/L	Grab	Annually
Carbon disulfide	µg/L	Grab	Quarterly
Chlorate	µg/L	Grab	Quarterly
2-Chlorotoluene	µg/L	Grab	Annually
4-Chlorotoluene	µg/L	Grab	Annually
Diazinon	µg/L	Grab	Annually
Dichlorodifluoromethane (Freon 12)	µg/L	Grab	Annually
1,4-Dioxane	µg/L	Grab	Annually
Ethylene glycol	µg/L	Grab	Annually
Formaldehyde	µg/L	Grab	Annually
HMX	µg/L	Grab	Quarterly <sup>22</sup>
Isopropylbenzene	µg/L	Grab	Annually
Manganese	µg/L	Grab	Quarterly
Methyl isobutyl ketone (MIBK)	µg/L	Grab	Annually
Naphthalene	µg/L	Grab	Annually
n-Nitrosodiethylamine (NDEA)	µg/L	Grab	Annually
n-Nitrosodimethylamine (NDMA)	µg/L	Grab	Quarterly <sup>23</sup>
n-Nitrosodi-n-propylamine (NDPA)	µg/L	Grab	Annually
Propachlor	µg/L	Grab	Annually

**Commented [A93]:** Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: \*As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.

**Commented [A94]:** Footnote 23 - Excessive frequency (monthly, weekly) unwarranted based on last five years of monitoring data. Recommend removal of footnote.

<sup>22</sup> Monitoring for some constituents has not been fully reviewed by CDPH. The monitoring frequency may be reduced for these or any constituent upon review by CDPH and the Regional Water Board. For these newly added constituents, WRD shall monitor them quarterly for the first four quarters and starting with the fifth quarter, may decrease the frequency to annual monitoring for constituents whose results were consistently below the RL.

<sup>23</sup> Monthly sampling of advanced treated recycled water for the first year. If concentrations exceed 10 ng/L, then weekly monitoring may be required. After a year of sampling without exceeding the conditional concentration, quarterly monitoring may resume. NDMA sampling for CEC requirements may be used to replace effluent monitoring where the sampling frequencies, analysis method, and detection limits coincide. See Table M-17 and Order Section IV.1.

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Constituents	Units	Type of Sample	Minimum Frequency of Analysis
n-Propylbenzene	µg/L	Grab	Annually
RDX	µg/L	Grab	Annually <sup>22</sup>
Tertiary butyl alcohol (TBA)	µg/L	Grab	Quarterly
1,2,3-Trichloropropane (1,2,3-TCP)	µg/L	Grab	Annually
1,2,4-Trimethylbenzene	µg/L	Grab	Annually
1,3,5-Trimethylbenzene	µg/L	Grab	Annually
2,4,6-Trinitrotoluene (TNT)	µg/L	Grab	Quarterly <sup>22</sup>
Vanadium	µg/L	Grab	Annually

**Commented [A95]:** Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: \*As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.

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**Commented [A96]:** Talking Point #6 (Inconsistent with the CDPH approved 2013 Engineering Report) that states: \*As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL.

Constituents		
<b>Pesticides</b>	<b>Metals</b>	Di-n-butyl phthalate
Aldrin	Chromium III	Di-n-octyl phthalate
Dieldrin	Chromium VI	Diethyl phthalate
4,4'-DDT	<b>Base/Neutral Extractables</b>	Dimethyl phthalate
4,4'-DDE	Acenaphthene	Benzo(a)anthracene
4,4'-DDD	Benzidine	Benzo(a)fluoranthene
Alpha-endosulfan	Hexachloroethane	Benzo(k)fluoranthene
Beta-endosulfan	Bis(2-chloroethyl)ether	Chrysene
Endosulfan sulfate	2-chloronaphthalene	Acenaphthylene
Endrin aldehyde	1,3-dichlorobenzene	Anthracene
Alpha-BHC	3,3'-dichlorobenzidine	1,12-benzoperylene
Beta-BHC	2,4-dinitrotoluene	Fluorene
Delta-BHC	2,6-dinitrotoluene	Phenanthrene
<b>Acid Extractables</b>	1,2-diphenylhydrazine	1,2,5,6-dibenzanthracene
2,4,6-trichlorophenol	Fluoranthene	Indeno(1,2,3-cd)pyrene
P-chloro-m-cresol	4-chlorophenyl phenyl ether	Pyrene
2-chlorophenol	4-bromophenyl phenyl ether	<b>Volatile Organics</b>
2,4-dichlorophenol	Bis(2-chloroisopropyl)ether	Acrolein
2,4-dimethylphenol	Bis(2-chloroethoxy)methane	Acrylonitrile
2-nitrophenol	Hexachlorobutadiene	Chlorobenzene
4-nitrophenol	Isophorone	Chloroethane

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Table M-13: Remaining Priority Pollutants		
Constituents		
2,4-dinitrophenol	Nitrobenzene	1,1-dichloroethylene
4,6-dinitro-o-cresol	N-nitrosodiphenylamine	Methyl chloride
Phenol	Bis(2-ethylhexyl)phthalate	Methyl bromide
	Butyl benzyl phthalate	2-chloroethyl vinyl ether

Table M-14: Constituents of Emerging Concern						
Constituent	Relevance/ Indicator Type	Type of Sample	Minimum Frequency of Analysis	Reporting Limit (µg/L)	Monitoring Locations <sup>24</sup>	
					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	Annually	0.05	X	X
Sucralose	Performance	grab	Annually	0.1	X	X

Table M-15: Surrogates				
Constituent	Type of Sample	Minimum Frequency	Monitoring Locations	
			Prior to RO Treatment	Following Treatment prior to Well Injection
Electrical Conductivity	Online	Continuous <sup>25</sup>	X	X

<sup>24</sup> The January 22, 2013 Recycled Water Policy Attachment A makes a distinction between health-based and performance-based CEC indicators for purposes of monitoring locations. For subsurface applications, the health-based CECs are 17β-estradiol, caffeine, NDMA, and triclosan, with monitoring required for final recycled water only. The health-based and performance-based CECs are caffeine, NDMA, DEET, and sucralose, with monitoring required prior to Reverse Osmosis and post-treatment prior to release to the aquifer. Caffeine and NDMA serve both as health-based and performance based indicators (Version 4/14/2014)

Table M-15: Surrogates				
Constituent	Type of Sample	Minimum Frequency	Monitoring Locations	
			Prior to RO Treatment	Following Treatment prior to Well Injection
TOC	24-hour composite	Weekly	X	X

Consistent with the January 22, 2013 amended Recycled Water Policy, the Project Sponsor may request the removal of specific CECs from the monitoring program if supported by the data.

- i. Analytical methods for CECs shall be selected to achieve the reporting limits presented in Table M-14 in accordance with the Recycled Water Policy. The analytical methods shall be based on methods published by the USEPA, methods certified by CDPH, or peer reviewed and published methods that have been reviewed by CDPH. Any modifications to the published or certified methods shall be reviewed and approved by the Regional Water Board and CDPH.
- ii. For performance indicator CECs and surrogates, removal percentages shall be reported in addition to the measured concentrations.

[1] The removal percentage shall be calculated based on the following formula:

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

X<sub>in</sub> = Concentration in recycled water prior to a treatment process

X<sub>out</sub> = Concentration in recycled water after a treatment process

[2] 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.

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

c. Evaluation of Pathogenic Microorganism Removal

For the purposes of evaluating the performance of the following treatment

<sup>25</sup> Since monitoring will be continuous using online analyzers, monthly averages for each monitoring location shall be reported in the quarterly compliance monitoring reports.  
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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:

- i. Long Beach WRP (and Los Coyotes WRP, if the tertiary effluent is used as a source water): For the purpose of demonstrating that the necessary log reductions are achieved at the WRP(s), Project Sponsors shall report the daily average and maximum turbidity, percent of time more than 5 nephelometric turbidity units (NTU), and daily coliform results associated with the WRP(s);
  - ii. MF (Vander Lans WTF): For each day of operation, the membrane integrity test (MIT) sampling shall be performed, the value, and the daily "Pass" or "Fail" and "Repaired" or "Off-line" results shall be reported;
  - iii. RO (Vander Lans WTF): Conductivity and TOC shall be continuously measured upstream of the RO feedwater and downstream of the RO product water using online analyzers, and for each day of operation, the following shall be reported for both conductivity and TOC - daily minimum, maximum, average, and percent reductions based on daily average values;
  - iv. AOP (UV and hydrogen peroxide at Vander Lans WTF): For each day of operation, Project Sponsors shall report the calculated daily peroxide dose (based on the peroxide pump speed and bulk feed concentration), percent reduction based on daily average of chloramine (via total residual chlorine) measured upstream and downstream of 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 milli-joules/cm<sup>2</sup>), UV transmittance (daily minimum, maximum, and average), and UV intensity for each reactor (daily minimum, maximum, and average); and
  - v. Based on the calculation of log reduction achieved each day by the entire treatment system, 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*, 10-logs for *Cryptosporidium*, and 12-logs for virus) have been attained. An overall log reduction calculation shall be provided only for those days when a portion of the treatment system does not achieve the credits proposed in Table 5-1 of the engineering report.
- d. Pilot Test to Demonstrate Oxidation Process
- i. The requirements which apply during the Pilot Test are included in R4-2005-0061-A01 adopted on March 6, 2014.
  - ii. The expanded Vander Lans WTF will include an advanced oxidation system developed in consultation with CDPH and designed to remove

Commented [A97]: Talking Point #8 (Repetitive Permit Requirements) and Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #16.

Commented [A98]: Talking Point #8 (Repetitive Permit Requirements) - see CDPH Condition #17.

Commented [A99]: Based on the suggested October 1, 2014 effective date of the permit - some parts of this section may not be relevant (i.e. already completed) so the language may require a modification.

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constituents of emerging concern. To demonstrate a sufficient oxidation process has been designed, the GWRRs require project proponents of subsurface application using full advanced treatment to perform a pilot test to demonstrate that the oxidation process will provide a 0.5-log (69 percent) reduction of 1,4-dioxane. To satisfy the requirement, a spiking test shall be conducted during the commissioning phase of the expanded Vander Lans WTF per the testing protocol, which shall be described in a separate technical memo and submitted for CDPH's review and approval. The pilot test shall also confirm the suitability of using chloramine (via total residual chlorine) as the surrogate and/or operational parameter. (Based on the data provided by CSDLAC for the Long Beach WRP's existing recycled water from January 2007 thru June 2011, 1,4-dioxane in the Vander Lans WTF influent averaged at 1.9 µg/L, with a range of 1.5 and 2.6 µg/L. After the full treatment at Vander Lans WTF (including RO and UV but no hydrogen peroxide), 1,4-dioxane was never detected above the MRL of 1 ug/L in Vander Lans WTF's recycled water. Once hydrogen peroxide is added to the treatment train (i.e., post-expansion), greater removal efficiency is anticipated from the use of full AOP).

- iii. During the full-scale operation of the oxidation process, continuous online monitoring of chloramine (via total residual chlorine) shall be provided for the recycled water to serve as a surrogate or operational parameter for the purpose of ensuring that the process is operating as designed. Because the influent consists of fully chloraminated water (absent of free chlorine), the total residual chlorine measurements should adequately represent chloramine levels in the recycled water. The treatment system shall also have alarms associated with certain critical points (as fully detailed in section 14 of the 2013 Title 22 Engineering Report for the Vander Lans WTF Expansion) to alert the operators of any potential concerns with the operational performance. Should the results of the pilot test identify an alternate surrogate that is more effective or suitable than chloramine, the Project Sponsors may submit for review and approval by CDPH a request to use the alternate surrogate instead of chloramine.

~~iv. Each quarter, the Project Sponsors shall tabulate the percent of the quarter's monitoring that did not meet the surrogate limits established to assure proper on-going performance of the RO and UV/AOP. If the value is more than ten percent, within 30 days after the end of the quarter, the Project Sponsors shall:~~

~~[1]. Submit a report to the CDPH and Regional Water Board describing the corrective actions planned or taken to reduce the percent to ten percent or less; and~~

~~[2]-[1]. Consult with the CDPH and, if required, comply with an alternative monitoring plan approved by the CDPH.~~

~~v-iv. Within 60 days after completing the initial 12-months of monitoring during~~

Commented [A100]: Talking Point #8 (Repetitive Permit Requirements) - see CDPH Condition #5.

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the full-scale operation, the Project Sponsors shall submit a report to the CDPH and Regional Water Board that includes:

- [1]. The results of chloramine (via total residual chlorine) monitoring performed;
  - [2]. A description of the efficacy of the chloramine (via total residual chlorine) to reflect the removal differential of 1,4-dioxane; and
  - [3]. A description of actions taken, or those that would be taken, if the indicator compound removal did not meet the associated design criteria, the continuous surrogate monitoring failed to correspond to the indicator compound removal percentage, or the surrogate and/or operational parameter established was not met.
- vi. Within 60 days after completing 12 months of operation of the MF, RO and AOP, the Project Sponsors shall submit a report to the CDPH and Regional Water Board describing the effectiveness of the treatment, process failures, and actions taken in the event the on-going monitoring that process integrity was compromised.
- e. Diluent Water Monitoring
- i. 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 section 60320.214 of the GWRR, the Project Sponsors are exempted from nitrate and nitrite monitoring in diluent water when using a CDPH-approved drinking water source for diluent water. This exemption is applicable to Project Sponsors since MWD's potable water is a CDPH-approved drinking water source.
  - ii. Section 60320.214 of the GWRR requires ensuring diluent water does not exceed primary MCLs or NLs and is produced implementing a CDPH-approved water quality monitoring plan for CDPH-specified contaminants to demonstrate compliance with the primary MCLs and NLs.
  - iii. MWD currently delivers an average of 1.7 billion gallons of water per day to a 5,200-square-mile service area covering 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.

f. Blended Recycled Water Monitoring

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

Constituent	Units	Type of Sample	Minimum Frequency of Analysis
Total Blended Flow	mgd	---	Total monthly
Chlorine residual	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 <sup>26</sup>	mg/L	Grab	Weekly

4. ~~Treatment Conditions~~

a. ~~Monitoring of treatment conditions is required to:~~

- ~~i. Determine compliance with the Permit conditions;~~
- ~~ii. Identify operational problems and aid in improving facility performance; and~~
- ~~iii. Provide information on recycled wastewater characteristics and flows for use in interpreting water quality and biological data.~~

~~Samples from recycled water shall be collected from the channel downstream of the sodium hypochlorite injection and before injection into the groundwater. Sampling described under treatment conditions section IV.1, shall be collected as described below. Should the need for a change in the sampling station(s) arise in~~

<sup>26</sup> Total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as nitrogen. Consistent with the recycled water monitoring, weekly total nitrogen monitoring is required. Since this table refers to MCLs and the Order states that the list should remain consistent with the most recent regulations, any redefinitions of MCL should be reflected in a change in the monitoring requirements  
 (Version 4/14/2014)

~~the future, the Project Sponsors shall seek approval of the proposed station by the Executive Officer prior to use.~~

Table M-17 – Treatment Conditions		
Parameter	Unit	Frequency
N-Nitrosodimethylamine (NDMA) <sup>27</sup>	µg/L	Monthly for the first year, and then quarterly. Weekly or monthly if treatment conditions are exceeded.

~~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 Board, with a copy provided to CDPH. If the running four week average is greater than 10 ng/L for sixteen consecutive weeks, the Project Sponsors shall notify CDPH and the Regional Board within 48 hours of knowledge of the exceedance and, if directed by CDPH or the Regional Board, suspend injection of the advanced treated recycled water.~~

5-3. 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, from the shallowest to the deepest, including the Recent Zone, Zone C, Zone B, Zone A, Zone I, and the Main Aquifer. Table M-18 and M-19 sets forth the minimum constituents and parameters for monitoring groundwater quality in Los Angeles County Flood Control District monitoring wells (LACFCD Well Nos. 503BF, 503BE, 502BW, 502BX, 502AK, 502AL, 502AM, and 502AN).

The Project Sponsors shall implement the following groundwater monitoring program as described in Tables M-20. Some constituents may be eligible for reduced monitoring due to the consistent historic lack of detection, 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 Alamitos Barrier, the Project Sponsors shall notify the CDPH and Regional Water Board within 72 hours of

**Commented [A101]:** Talking Point #5 (Technically Unsupported Requirement). Based on the most recent 5 years of monitoring data, this requirement is deemed excessive and unnecessary since NDMA in recycled water was consistently below 10 ng/L (except for one isolated and minimal event that occurred during the first quarter 2013 at 17 ng/L) and given that the expansion will include an AOP.

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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 monitoring samples in groundwater wells 502BW, 502B~~X~~, 503BF or 503 BE, and within 30 days, the Project Sponsors shall notify CDPH and the Regional Board 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 below. The Project Sponsors shall propose a study for approval by the Executive Officer, which will identify the sources of the NDMA, and propose specific operational or facility changes to prevent a recurrence. After approval, the study shall be completed within no more than a year. During the completion and approval of the study, the Project Sponsors will continue monthly groundwater sampling for NDMA.~~

~~Additional monitoring, reporting and trend analysis for total nitrogen shall be applied to the monitoring data collected for the Alamitos Barrier Project and contrasted with the water quality changes predicted by model and documented in the first annual report. Should any groundwater monitoring well show an increase in the total nitrogen concentration of 10% over the value predicted by the Project Sponsors in the first annual report, additional studies shall be completed. These may include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the SNMP model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated.~~

CDPH allowed a reduction in groundwater monitoring frequency from quarterly to semi-annual or annual based upon performance between 2007 and 2012, when the recycled water injection volume was 50% or less. ~~The modified groundwater monitoring frequency approved by CDPH shall be maintained for each well until 6 months before the arrival of recycled water is anticipated by modeling estimates. At that time, the Project Sponsors shall begin the quarterly monitoring for all constituents listed in Table M-20. After four quarters of sampling, a discussion of the findings in the annual report and the absence of unexpected results, the Project Sponsors may resume the monitoring frequency approved by CDPH in 2007.~~

Table M-18 Groundwater Monitoring Wells

Project No.	Well No.	WRD Monitoring Well ID	Top of Well Casing (TOWC) Elevation (ft. above mean sea level)	Perforated Interval (ft. below TOWC)	Aquifer	Well Use
34L'1	503P	100254	10.2	15 – 25	Recent	Background
34L'1	503M	100253	10.5	610 – 620	Main	Background

**Commented [A102]:** Talking Point #8 (Repetitive Permit Requirements) and Talking Point #6 (Inconsistent with CDPH Conditions) - see CDPH Condition #19. Talking Point #5 (Technically Unsupported Requirement). Based on the most recent 5 years of monitoring data, this requirement is deemed excessive and unnecessary since NDMA in recycled water was consistently below 10 ng/L (with one isolated minimal exception at 17 ng/L) and given that the expansion will include an AOP.

**Commented [A103]:** Talking Point #5 (Technically Unsupported Requirement). Modeling shows no impact of concern for nitrogen. **See Attachment 7.**

**Commented [A104]:** Talking Point #5 (Technically Unsupported Requirement) and Talking Points #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water). Based on the monitoring data for the recycled water, almost all of the constituents are not detected (see section 7 of the 2013 approved Engineering Report) and therefore do not pose a concern. The rationale is questionable for this new requirement, which places a significant resource and financial burden on the Project Sponsor without a corresponding benefit.

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**Table M-18 Groundwater Monitoring Wells**

Project No.	Well No.	WRD Monitoring Well ID	Top of Well Casing (TOWC) Elevation (ft. above mean sea level)	Perforated Interval (ft. below TOWC)	Aquifer	Well Use
34LS	503BF	100258	7	136 – 181	C-Zone	3-Month
34LS	503BE	100257	7	191 – 216	B-Zone	3-Month
34HJ	502BX	100242	9.4	314 – 344	A-Zone	3-Month
34HJ	502BW	100243	9.5	400 – 440	I-Zone	3-Month
34L10	502AK	100252	5.6	165 – 185	C-Zone	¼ Distance
34L10	502AL	100251	5.6	225 – 260	B-Zone	¼ Distance
34L10	502AM	100250	5.6	311 – 365	A-Zone	¼ Distance
34L10	502AN	100249	5.6	405 – 450	I-Zone	¼ Distance

**Table M-19: Groundwater Monitoring<sup>29</sup>**

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Water level elevation <sup>28</sup>	feet	---	Quarterly
Chlorine residual	mg/L	Grab	Quarterly
TOC	mg/L	Grab	Quarterly
Total coliform	MPN/100ml	Grab	Quarterly
BOD <sub>5</sub> 20°C	mg/L	Grab	Semiannually <sup>29</sup>
Oil and grease	mg/L	Grab	Quarterly
Total nitrogen	mg/L	Grab	Quarterly
TSS	mg/L	Grab	Semiannually
Turbidity	NTU	Grab	Quarterly
Inorganics with primary MCLs	µg/L	Grab	Quarterly
Constituents/parameters with secondary MCLs	---	Grab	Quarterly

**Commented [A105]:** Talking Point #5 (Technically Unsupported Requirement) and Talking Points #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water). Based on the monitoring data for the recycled water, almost all of the constituents are not detected (see section 7 of the 2013 approved Engineering Report) and therefore do not pose a concern. The rationale is questionable for this new requirement, which places a significant resource and financial burden on the Project Sponsor without a corresponding benefit.

<sup>28</sup> Water level elevations shall be measured to the nearest 0.01 feet, and referenced to mean sea level.

<sup>29</sup> CDPH allowed a reduction in groundwater monitoring frequency based upon the performance between 2007 and 2012, when the recycled water injection volume was 50% or less. The modified groundwater monitoring frequency approved by CDPH is included in this table, and shall be maintained for each well until 6 months before the arrival of recycled water is anticipated by modeling estimates. At that time, the Project Sponsors shall begin the quarterly monitoring of all those constituents listed in Table M-20. After four quarters of sampling and confirmation that the results are not unexpected, the Project Sponsors may resume the monitoring frequency approved by CDPH in 2007.

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**Table M-19: Groundwater Monitoring**

Constituents/Parameters	Units	Type of Sample	Minimum Frequency of Analysis
Fluoride	µg/L	Grab	Quarterly
Radioactivity	pci/L	Grab	Quarterly or Semiannually
Regulated organics	µg/L	Grab	Quarterly or Semiannually
Disinfection byproducts (DBPs)	µg/L	Grab	Quarterly
General physical		Grab	Quarterly
General minerals	µg/L	Grab	Quarterly
Chemicals with NLs	µg/L	Grab	Quarterly or Annually
N-Nitrosopyrrolidine	µg/L	Grab	Annually
Remaining priority pollutants	µg/L	Grab	Annually

**Commented [A105]:** Talking Point #5 (Technically Unsupported Requirement) and Talking Points #9 (Permit Treats Project as Disposal of Waste Versus Beneficial Reuse of Recycled Water). Based on the monitoring data for the recycled water, almost all of the constituents are not detected (see section 7 of the 2013 approved Engineering Report) and therefore do not pose a concern. The rationale is questionable for this new requirement, which places a significant resource and financial burden on the Project Sponsor without a corresponding benefit.

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**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Well 100242	Well 100243	Well 100249	Well 100250	Well 100251	Well 100252	Well 100253	Well 100254	Well 100257	Well 100258
Total Suspended Solids (TSS)	Qtrly									
Turbidity	Qtrly									
<b>Radioactivity</b>										
Gross Alpha Particle Activity (including Radium-226 but excluding radon and uranium)	Semi Annual									
Gross Beta Particle Activity	Semi Annual	Qtrly	Semi Annual							
Radium-226	Semi Annual	Semi Annual	Qtrly	Semi Annual						
Radium-226 & Radium-228 (Combined)	Semi Annual	Qtrly								
Radium-228	Semi Annual									
Strontium-90	Semi Annual									
Tritium	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Semi Annual*	Semi Annual				
Uranium	Semi Annual									
<b>Organic Chemicals</b>										
<b>(a) Volatile Organic Chemicals</b>										
1,1,1-Trichloroethane	Semi Annual									
1,1,2,2-Tetrachloroethane	Semi Annual									
1,1,2-Trichloro-1,2,2-Trifluoroethane	Semi Annual									
1,1,2-Trichloroethane	Semi Annual									
1,1-Dichloroethane	Semi Annual									

**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Semi Annual									
1,1-Dichloroethene (1,1 DCE)	Semi Annual									
1,2,4-Trichlorobenzene	Semi Annual									
1,2-Dichlorobenzene	Semi Annual									
1,2-Dichloroethane (1,2 DCA)	Semi Annual									
1,2-Dichloropropane	Semi Annual									
1,3-Dichloropropene	Semi Annual									
1,4-Dichlorobenzene	Semi Annual									
Benzene	Semi Annual									
Carbon Tetrachloride (CTC)	Semi Annual									
cis-1,2-Dichloroethylene	Semi Annual									
Dichloromethane	Semi Annual									
Ethylbenzene	Semi Annual									
Methyl-tert-butyl-ether (MTBE)	Semi Annual									
Monochlorobenzene	Semi Annual									
Styrene	Semi Annual									
Tetrachloroethylene (PCE)	Semi Annual									
Toluene	Semi Annual									
trans-1,2-Dichloroethylene	Semi Annual									
Trichloroethylene (TCE)	Semi Annual									
Trichlorofluoromethane	Semi Annual									
Vinyl Chloride	Semi Annual	Semi Annual	Semi Annual	Semi Annual	Qtrly	Qtrly	Semi Annual	Semi Annual	Semi Annual	Semi Annual

**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Semi Annual									
Xylenes (m, p)	Semi Annual									
<b>(b) non-volatile synthetic organic chemical</b>										
1,2-Dibromo-3-Chloropropane (DBCP)	Semi Annual									
2,3,7,8-TCDD (Dioxin)	Semi Annual									
2,4,5-TP (Silvex)	Semi Annual									
2,4-Dichlorophenoxyacetic acid (2,4-D)	Semi Annual									
Alachlor	Semi Annual									
Atrazine	Semi Annual									
Bentazon	Semi Annual									
Benzo (a) pyrene	Semi Annual									
Carbofuran	Semi Annual									
Chlordane	Semi Annual									
Dalapon	Semi Annual									
Di (2-ethylhexyl) adipate	Semi Annual									
Di (2-ethylhexyl) phthalate	Semi Annual									
Dinoseb	Semi Annual									
Diquat	Semi Annual									
Endothal	Semi Annual									
Endrin	Semi Annual									
Ethylene Dibromide (EDB)	Semi Annual									
Glyphosate	Semi Annual									

**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Semi Annual									
Heptachlor	Semi Annual									
Heptachlor Epoxide	Semi Annual									
Hexachlorobenzene	Semi Annual									
Hexachlorocyclopentadiene	Semi Annual									
Lindane (Gamma BHC)	Semi Annual									
Methoxychlor	Semi Annual									
Molinate	Semi Annual									
Oxamyl	Semi Annual									
PCB 1016	Semi Annual									
PCB 1221	Semi Annual									
PCB 1232	Semi Annual									
PCB 1242	Semi Annual									
PCB 1248	Semi Annual									
PCB 1254	Semi Annual									
PCB 1260	Semi Annual									
Pentachlorophenol	Semi Annual	Annual ***	Semi Annual	Semi Annual	Semi Annual					
Picloram	Semi Annual									
Simazine	Semi Annual									
Thiobencarb	Semi Annual									
Toxaphene	Semi Annual									
<b>Disinfection Byproducts</b>										
Bromate	Semi Annual									

**Commented [A106]:** What does \*\*\* mean- there is no note for the table? This table appears identical to Table 13-16 from the 2013 approved Engineering Report. If so, \*\*\* associated with Table 13-16 was used to note the following: "The March 23, 2007 letter from the CDPH approved semi-annual monitoring; however, starting 2007, constituent has been consistently ND. Therefore, annual monitoring frequency is proposed."

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**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Semi Annual									
Bromodichloromethane	Semi Annual									
Bromoform	Semi Annual									
Chlorite	Semi Annual	Quarterly	Semi Annual	Semi Annual						
Chloroform	Semi Annual									
Dibromoacetic Acid	Semi Annual									
Dibromochloromethane	Semi Annual									
Dichloroacetic Acid	Semi Annual									
Haloacetic Acid (Five) (HAA5)	Semi Annual									
Monobromoacetic Acid	Semi Annual									
Monochloroacetic Acid	Semi Annual									
Total Trihalomethanes	Semi Annual									
Trichloroacetic Acid	Semi Annual									
<b>Chemicals with Notification Levels</b>										
1,2,3-Trichloropropane (1,2,3 TCP)	Annual									
1,2,4-Trimethylbenzene	Annual									
1,3,5-Trimethylbenzene	Annual									
1,4-Dioxane	Annual									
2-Chlorotoluene	Annual									
2,4,6-Trinitrotoluene (TNT)	Qtrly									
4-Chlorotoluene	Annual									
Boron	Qtrly									
Carbon Disulfide	Annual	Annual	Annual	Annual	Annual	Semi Annual	Annual	Annual	Annual	Annual
Chlorate	Annual									

**Commented [A107]:** Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."

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**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Annual									
Diazinon	Annual									
Dichlorodifluoro- methane (Freon 12)	Annual									
Ethylene Glycol	Annual									
Formaldehyde	Annual									
<del>HMX</del>	Qtrly									
Isopropylbenzene	Annual									
Manganese	Semi Annual									
Methyl-isobutyl- ketone (MIBK)	Annual									
Naphthalene	Annual									
n-Butylbenzene	Annual									
n-Nitrosodiethyl- amine (NDEA)	Annual									
n- Nitrosodimethylam- ine (NDMA)	Qtrly									
n-Nitrosodi-n- propylamine (NDPA)	Annual									
n-Propylbenzene	Annual									
Propachlor	Annual									
<del>RDX</del>	Qtrly									
sec-Butylbenzene	Annual									
tert-Butylbenzene	Annual									
Tertiary-butyl- alcohol (TBA)	Annual									
Vanadium	Annual									
<b>Remaining Priority Pollutants</b>										
<b>Pesticides</b>										
4,4,4'-DDD	Annual									
4,4,4'-DDE	Annual									
4,4,4'-DDT	Annual									
Aldrin	Annual									
Alpha BHC	Annual									
Alpha Endosulfan	Annual									

**Commented [A108]:** Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."

**Commented [A109]:** Need a footnote to be consistent with Table M-12 and the 2013 approved Engineering Report: "As for these newly added constituents, the WRD proposes to monitor them quarterly for the first year and starting the second year, decrease to annual monitoring for constituents that were consistently less than the RL."

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**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Beta BHC	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Beta Endosulfan	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chromium III	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chromium VI	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Delta BHC	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Dieldrin	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Endosulfan Sulfate	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Endrin Aldehyde	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
<b>Acid Extractables</b>										
2,4,6-Trichlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dichlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dimethylphenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dinitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chlorophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Nitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4,6-Dinitro-o-Cresol (2-Methyl-4,6-Dinitrophenol)	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Nitrophenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
p-Chloro-m-Cresol (3-Methyl-4-Chlorophenol)	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Phenol	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
<b>Base/Neutral Extractables</b>										
1,12-Benzoperylene ((Benzo(g,h,i)-perylene))	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,2,5,6-Dibenzanthracene ((Dibenzo(a,h)anthracene))	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,2-Diphenylhydrazine	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
1,3-Dichlorobenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,4-Dinitrotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

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**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2,6-Dinitrotoluene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chloronaphthalene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
3,3'-Dichlorobenzidine	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Bromophenyl phenyl ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
4-Chlorophenyl phenyl ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acenaphthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acenaphthylene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Anthracene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzidine	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(a)anthracene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(b)fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Benzo(k)fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroethoxy)-methane	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroethyl)ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Bis(2-chloroisopropyl)ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Butyl benzyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chrysene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di(2-ethylhexyl) phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Semi-annual	Annual	Annual	Annual
Dimethyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di-n-butyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Di-n-octyl phthalate	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Fluoranthene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Fluorene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Hexachlorobutadiene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

**Table M-20: Monitoring Frequency<sup>29</sup>**

Constituent	Frequency									
	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Hexachloroethane	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Indeno(1,2,3-cd) pyrene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Isophorone	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Nitrobenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodi-n-propylamine	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
n-Nitrosodiphenylamine	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Phenanthrene	Annual	Annual	Annual	Annual	Annual	Annual	Semi-Annual	Annual	Annual	Annual
Pyrene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
<b>Volatile Organics</b>										
1,1-Dichloroethylene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
2-Chloroethyl vinyl ether	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acrolein	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Acrylonitrile	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chlorobenzene	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Chloroethane	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Methyl bromide	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual
Methyl chloride	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual	Annual

**Table M-21 – Total Nitrogen Sampling at Seal Beach LEI-1 and the three other closest drinking water**

Parameter	Unit	Frequency
Total Nitrogen	µmg/L	Quarterly

**V. START-UP TESTING**

~~During any startup testing after pilot testing and before commissioning, the AWTF expansion team shall (1) test all equipment signals, alarms, output devices, and~~

**Commented [A110]:** Talking Point #5 (Technically Unsupported Requirement) – This is an onerous new requirement, and it is unclear why this is being added. WRD does not own these drinking water wells. The closest drinking water well, SB-LEI's Title 22 monitoring data are already required to be included in the Annual Report. Recommend removal.

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~~communication devices to be certain that they are operating correctly; and (2) test all mechanical systems to verify that the facility can accept and satisfactorily treat recycled water at the new design capacity of 8 mgd.~~

~~Over the course of the startup testing, monitoring and reporting shall continue to be performed pursuant to the requirements of the MRP. The results of the startup testing shall be reported to the Regional Board and CDPH upon completion of the tests. The effluent limits, prohibitions and provisions of the permit shall continue to apply. Discharge which does not, or is not reasonably expected to, attain the limits or conditions specified in this Order shall be wasted through the sewer to the Joint Plant Water Treatment Facility. The Regional Board acknowledges that during the testing process, containment of poor quality water may not be complete, but the project sponsors shall document procedures, testing results and monitoring showing a best-faith effort to contain test waters which do not comply with the requirements of this Order~~

**Commented [A111]:** WRD recommends that this Order take effect after the Startup testing is completed; the reporting of the startup testing results to the regulatory agencies is covered under R4-2005-0061-A01; therefore, this provision is deemed not relevant and thus recommend removal.

## VI. CERTIFICATION STATEMENT

Each report shall contain the following declaration<sup>30</sup>:

"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)"

## VII. OTHER MONITORING REQUIREMENTS

The list of parameters and monitoring frequencies may be adjusted by the Executive Officer if the Project Sponsor makes a request and the Executive Officer determines that the modification is adequately supported by statistical trends of monitoring data submitted.

<sup>30</sup> The Project Sponsors shall submit written documentation identifying the responsible party who certifies the perjury document.

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# **ATTACHMENT D**

## Attachment D

### **Comparison of 2005 Groundwater Recharge with Recycled Water Regulations (GWRR) and June 2013 Proposed GWRR**

It is the District's understanding that the Board agenda package for this tentative Permit will address the differences in the 2013 draft GWRR and the regulations in place at the time the Order was issued in 2005. The following information is provided to assist the Regional Water Board staff with the comparison of the two versions of the GWRR and to summarize how the Alamitos Barrier Recycled Water Project will be able to comply with the requirements.

In August 2013, CDPH released Proposed GWRR (dated June 26, 2013). CDPH has a statutory mandate to adopt final regulations by June 30, 2014, as emergency regulations without Office of Administrative Law Review. Proposed projects and expansions of existing projects can continue to move forward prior to formal adoption of the regulations using the June 2013 Proposed GWRR.

The overarching principles taken into consideration by CDPH in developing the Proposed GWRR were:

- GWR projects are replenishing groundwater basins that are used as sources of drinking water.
- Control of pathogenic microorganisms should be based on a low tolerable risk which was defined as:
  - An annual risk of infection from pathogenic microorganisms in drinking water of one in 10,000;
- Compliance with drinking water standards for regulated chemicals; and
- Controls for unregulated chemicals.
- No degradation of an existing groundwater basin used as a drinking water source.
- Use of multiple barriers to protect water quality and human health.
- Projects should be designed to identify and respond to a treatment failure. A component of this design acknowledges that GWR projects inherently will include storage in a groundwater aquifer and include some natural treatment.

The existing 2005 permit for the Barrier Project was based on a 1999 approved Engineering Report that utilized draft GWR regulations from 1997, and a 2002 amendment to the Engineering Report that utilized draft GWR regulations from 2002. Prior to the 2005 permit adoption, draft GWRRs were released in 2003 and 2004 that influenced CDPH's recommendations for the 2005 permit. Table A-1 presents key differences between the CDPH regulatory conditions for the 2005 permit and those pursuant to the June 2013 Proposed GWRR used for developing recommendations for the proposed tentative permit.

**Table A-1. Comparison of Substantive Differences between the CDPH Requirements for the 2005 Permit Compared to the Requirements for the 2014 Tentative Alamitos Barrier Permit**

	<b>2005 CDPH Draft Requirements</b>	<b>June 2013 CDPH Proposed Requirements</b>
Initial Recycled Water Contribution (RWC) [RWC = recycled water ÷ (recycled water + dilution water)]	50% based on a 60-month averaging period	Determined by CDPH (can be up to 100%; for RWC < 100% the averaging period is 120 months). <i>An initial RWC is not applicable for the Alamitos Barrier tentative permit.</i>
Increased RWC	Can increase RWC if the project sponsor shows that: <ul style="list-style-type: none"> <li>The water applied at the subsurface injection facility with an average RWC of at least 0.4 has reached at least one monitoring well for at least one year and the GRRP has been in compliance with the existing CDPH-specified maximum average RWC</li> <li>The proposal has been reviewed by an expert panel</li> </ul>	Can increase RWC if the project sponsor shows that: <ul style="list-style-type: none"> <li>TOC 20-week average for prior 52 weeks = 0.5 mg/L</li> <li>Approved by CDPH and RWQCB</li> <li>Received a permit allowing operation at the increased maximum RWC</li> </ul> <p><i>[No expert panel review or proof of recycled water at a monitoring well]</i></p> <p><i>The Alamitos Barrier Project started off with an initial RWC of 50% in the existing permit and will increase the RWC to 100% under the tentative permit.</i></p>
Type of Advanced Treatment	Reverse Osmosis (RO) for RWC ≤ 50% RO and AOP for RWC > 50%	RO and Advanced Oxidation (AOP) <i>The Alamitos Barrier Project will be adding AOP to the treatment system.</i>
Advanced Treatment Criteria	If above RWC 50%: must provide AOP that can achieve 1.2-log NDMA reduction and 0.5-log 1,4-dioxane reduction whether NDMA or 1,4-dioxane are present or not	RO: specific criteria for sodium chloride injection for new membranes and TOC performance during the first 20 weeks of full scale operation. AOP: specific to demonstrate sufficient oxidation using two methods (1) indicators and surrogate performance study or (2) a 1,4-dioxane spiking study to demonstrate 0.5-log reduction and establish surrogate or operational parameters. <i>The Alamitos Barrier Project will demonstrate that it meets these criteria; for the AOP system, a 1,4-dioxane spiking study will be conducted.</i>

	2005 CDPH Draft Requirements	June 2013 CDPH Proposed Requirements
Pathogen Control	<p>Meet Title 22 filtered wastewater and disinfected tertiary recycled water</p> <p>Minimum Retention Time/Setback: The recycled water must be retained underground for at least 12 months, and cannot be extracted within 2,000 feet of any injection well</p>	<p>Meet Title 22 disinfected tertiary: N/A.</p> <p>Minimum Retention Time/Setback: N/A.</p> <p>Pathogen reduction: achieve a 12-log enteric virus reduction, a 10-log <i>Giardia</i> cyst reduction, and a 10-log <i>Cryptosporidium</i> oocyst reduction using at least 3 treatment barriers; each barrier must achieve at least 1.0-log reduction and cannot be credited with more than 6-log reduction; for virus, can receive 1-log reduction per month based on validated tracer study; the log reductions must be verified using a procedure approved by CDPH for the different barriers.</p> <p><i>The Alamitos Barrier Project has shown how the reductions will be achieved and the surrogates used to provide validation for the different unit processes; the retention time has already been validated by a tracer test.</i></p>
Nitrogen (N) Control	<p>Three Methods:</p> <p>(1) 5 mg/L total N in recycled water or recycled water mixed with dilution water</p> <p>(2) 10 mg/L total N in recycled water or recycled water mixed with dilution water with CDPH established limits for nitrate, nitrite, organic nitrogen, dissolved oxygen, and biochemical oxygen demand per the Engineering Report</p> <p>(3) Nitrogen MCLs in recycled water; only allowed for projects in operation greater than 20 years with no impacts on Nitrogen MCLs in drinking water wells</p>	<p>10 mg/L total N in recycled water or recycled water mixed with dilution water before or after application.</p> <p><i>The Alamitos Barrier Project can meet this limit in recycled water.</i></p>
Regulated Chemicals Control	<p>Meet all MCLs (except nitrogen compounds) in recycled water; compliance based on running quarterly average</p> <p>Meet all secondary MCLs in recycled water with the exception of color; compliance based on an annual average</p>	<p>Meet primary MCLs (except nitrogen compounds) in recycled water based on running annual average (or 4-week average for acutely toxic compounds).</p> <p>Meet disinfection byproduct MCLs in recycled water or recycled water mixed with dilution water based on running annual average.</p> <p>Meet secondary MCLs based on annual average.</p>

	2005 CDPH Draft Requirements	June 2013 CDPH Proposed Requirements
		<i>The Alamitos Barrier Project can meet these limits based on the CDPH Conditions.</i>
TOC	Filtered wastewater must meet 16 mg/L Recycled water TOC <sub>max</sub> = 0.5 mg/L ÷ RWC, based on 20 week average	TOC <sub>max</sub> = 0.5 mg/L <i>The Alamitos Barrier Project can meet this limit.</i>
Response Retention Time (RRT)	N/A	Recycled water must be retained underground for a period of time sufficient to identify treatment failures and implement actions, including the plan to provide an alternative water supply or treatment. The minimum time is 2 months, but must be justified by project sponsor. It must be validated using an added tracer or a CDPH approved intrinsic tracer. <i>The Alamitos Barrier has an approved RRT of 5 months as described in the approved Engineering Report.</i>
CEC Monitoring	Endnote 5 list of specific CECs	Proposed by project sponsor. <i>WRD has a recommended CEC monitoring list in the approved Engineering Report.</i>
Boundaries Restricting Locations of Drinking Water Wells	Cannot construct a drinking water well within 2,000 feet of the injection wells	Project proponents must establish a “zone of restricted well construction,” which represents the greatest of the horizontal and vertical distances reflecting the underground retention times required for pathogen control or for the RRT. <i>WRD had voluntarily agreed to keep the 2,000 foot boundary even though this represents a longer travel time than the 6-month travel time for pathogen control.</i>

# **ATTACHMENT 1**

## Attachment 1

### Introduction and WRD's Request to Remove "Waste" References in Draft Order:

The State of California, through its repeated Legislative and regulatory mandates, has made clear that substantially augmenting the use of recycled water in California is crucial to providing for and sustaining local water supplies. Increasing the acceptance, and promoting the use, of recycled water is a recognized means for achieving those sustainable local water supplies; thus, the State, the State and Regional Water Boards, and local governments all share the same duty to promote recycled water use via protective, but *reasonable*, requirements. (See Water Code §13000) In this case, however, the Draft Order fails to further the goals of the State as the Draft Order proposes to regulate the Alamitos Barrier Recycled Water Project ("Project") as one that involves the disposal of "waste," a characterization that will likely have a chilling effect on recycled water projects throughout the region at a time when recycled water use has the ability to decrease the impact of drought conditions. Though State law, regulations, and policies related to recycled water require only the issuance of "water reclamation requirements" to regulate its beneficial reuse, the Draft Order is unnecessarily presented as both "waste discharge requirements" issued pursuant to Water Code section 13263 and "water reclamation requirements" issued via Water Code section 13523, a confusing regulatory approach given disposal of "waste" and the beneficial reuse of "recycled water" are mutually exclusive activities as defined by the Water Code. For the reasons set forth below, the District objects to the characterization of the project as one that involves the disposal of "waste," rather than the beneficial use of "recycled water." All references to "waste" and "waste discharge requirements" should be removed from the Draft Order, and the Draft Order should be amended to exclude elements of "waste discharge requirements" that are not appropriate or necessary to regulate the beneficial reuse of "high quality advanced-treated recycled water."<sup>1</sup> (See Draft Order at Finding 4.)

### Draft Order Provisions at Issue:

While the Draft Order repeatedly describes the Project as one involving beneficial reuse of high quality recycled water, the Draft Order nonetheless includes the provisions cited below that instead attempt to regulate the project as the disposal of "waste." Curiously, though, the Draft Order never specifically identifies how or why the recycled water could be or is considered a "waste," or attempts to explain why waste discharge requirements or "waste"-related provisions are included. Instead, authority from the Water Code that solely authorizes water reclamation requirements is heavily cited as the basis for the Draft Order. (See Draft Order at Findings 27 – 32.) The Draft Order simply assumes, without justification or explanation, that the form of the permit and the references below are supported when, in fact, legal, technical and/or factual basis

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<sup>1</sup> The fact that the previous permit issued for the Project was both a waste discharge requirement and water reclamation requirement is not dispositive of whether that form of regulation is reasonable or appropriate for the Project. Previous regulatory errors or oversights should be corrected, where appropriate. Further, the District's submission of a report of waste discharge to renew the existing permit is not meaningful. The Regional Water Board has not yet adopted a permit application form for water reclamation requirements; thus, the only form available to the District is a Form 200 report of waste discharge. This regulatory deficiency cannot form the basis for any argument that the District should be subject to waste discharge requirements for its Project.

is lacking. Orders adopted by the Regional Water Board not supported by the findings, or findings not supported by the evidence, constitute an abuse of discretion. *Topanga Association for a Scenic Community v. County of Los Angeles*, 11 Cal.3d 506, 515; *California Edison v. SWRCB*, 116 Cal. App.3d 751, 761 (4th Dt. 1981); *see also In the Matter of the Petition of City and County of San Francisco, et al.*, State Board Order No. WQ-95-4 at page 10 (Sept. 21, 1995).

- Title of Draft Order – the title includes the term “Waste Discharge Requirements.” This phrase should be removed.
- Finding 26 – the final sentence states, “[t]he State Water Board and Regional Water Boards are responsible for issuing waste discharge requirements and water reclamation requirements for water that is used or proposed to be used as recycled water.” No authority is cited for this assertion, and none exists, with the exception of Water Code section 13253.1, which applies only to master recycling permits, not at issue here.
- Finding 38 – this finding states, “[p]ursuant to Water Code 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.” This citation presumes a discharge of “waste,” which has not been established in the Draft Order, because the permitted activity is the beneficial reuse of “recycled water.”
- Finding 39 and Effluent Limitation Section III – this finding states, “[t]his 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. This Regional Board terms these limits “effluent limitations” when included in waste discharge requirements for discharges to waters of the State. ...” This finding is problematic on several levels; first, it presumes that regulation in addition to that prescribed by Title 22 regulations for this type of project is needed, ostensibly due to the presumption within the Draft Order that a discharge of “waste” is occurring. Second, the Draft Order attempts to borrow terms and requirements (specifically, the term “effluent limitation”) from the inapplicable federal Clean Water Act NPDES permitting program, and based thereon, imposes end-of-pipe waste discharge restrictions. The term “effluent limitation” is not cited in the Water Code except in Chapter 5.5 of the Porter-Cologne Water Quality Control Act, which applies to solely to federally regulated discharges to surface waters of the United States, and a handful of other statutes that involve discharges to or through federal waters (*e.g.*, Water Code section 13263.7<sup>2</sup>). Rather, term is derived from the Clean Water Act and federal regulations cited in footnote 5 of the Draft Order. Thus, no legal, technical, or factual basis exists for terming requirements in the Draft Order as “effluent limitations,” and doing so will simply create confusion in the regulatory arena. While Finding 39 attempts to state that the term “effluent limitation” as

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<sup>2</sup> Water Code section 13263.7 was adopted as special legislation to ease regulatory burdens associated with a recycled water project in San Diego that involves conveying recycled water through waters of the United States (San Vicente Reservoir) to its ultimate destination, for which an NPDES Permit is required.

used in the Draft Order is not akin to the term used by the Clean Water Act, instead citing to Webster's Dictionary for support, the parallels are impossible to ignore, and this circumstance should be corrected by removing any reference to "effluent limitation."

- Findings 42 and 43 – these findings cite Water Code section 13267(b) as the statute authorizing the Regional Water Board to require technical or monitoring reports; however, as is evident from the quoted paragraphs, section 13267(b) applies only in the context of a discharge of "waste." Thus, citation to section 13267(b) should be removed from a permit governing the beneficial reuse of recycled water.
- Finding 45 – this finding refers to the District's recycled water as "recycled wastewater," a term not defined or used in the Water Code. The term "recycled water" should be used instead because it is the term used in the Regional Water Board's statute/regulations. (See Water Code §13050(n).)
- Pretreatment Specifications Section I.1.a. – this provision refers to the District's recycled water as "recycled municipal wastewater," a term not defined or used in the Water Code. The term "recycled water" should be used instead because it is the term used in the Regional Water Board's statute/regulations. (*Id.*)
- Additional Provisions VI.12 – this provision attempts to attach and incorporate by reference, the Regional Water Board's *Standard Provisions Applicable to Waste Discharge Requirements*. Rather than incorporating Standard Provisions that are inapplicable to the beneficial reuse of recycled water, the Regional Water Board should instead adopt Standard Provisions for Water Reclamation Requirements, or simply import relevant terms of the existing Standard Provisions directly into the District's water reclamation requirements.
- Monitoring and Reporting Provisions III.2.c.ii. and h. – these reporting requirements refer to "recycled municipal wastewater"; the term "recycled municipal wastewater" is not defined or used in the Water Code. The term "recycled water" should be used instead because it is the term used in the Regional Water Board's statute/regulations. (*Id.*)

### **Appropriate Regulation of Recycled Water Projects:**

In California, "waste" is defined as "sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed in containers of whatever nature prior to, and for purposes of, disposal." (Cal. Water Code §13050(d)).

"Recycled water" is defined as "water which, *as a result of treatment of waste*, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore *considered a valuable resource*." (Cal. Water Code §13050(n) (emphasis added).) Importantly, "waste" cannot be "recycled water," and "recycled water" by definition is not a "waste."

Therefore, for purposes of regulatory actions, the Regional Water Board must define the activity as one or the other, and regulate accordingly.

The Water Code creates two distinct regulatory schemes for regulating “waste” disposal and the beneficial reuse of “recycled water.” “Waste” disposal is regulated by Chapter 4, Article 4 of the Porter-Cologne Water Quality Control Act (Water Code sections 13260 – 13275), with Water Code section 13263 prescribing the issuance of “waste discharge requirements” (“WDRs”) for regulation and control. Beneficial reuse of “recycled water” is regulated by an entirely separate section of Porter-Cologne; specifically, Chapter 7, Article 7 (amongst other articles), with Water Code section 13523 prescribing the issuance of “water reclamation requirements” for recycled water projects. A significant difference between the two schemes is that the California Department of Public Health (“CDPH”) plays a major role in the definition of what constitutes “recycled water,” and the regulation of recycled water projects, as CDPH is the state agency charged with adopting regulations to address all aspects of recycled water conditions, treatment, operations, and use restrictions. (*See* Water Code §§ 13520, 13521 (authorizing CDPH to establish uniform statewide recycling criteria), 13523 (requiring water reclamation requirements be in conformance with CDPH’s recycling criteria), 13562 (authorizing CDPH to establish uniform water recycling criteria for indirect potable reuse for groundwater recharge), and 13563-13566 (authorizing CDPH to investigate the feasibility of developing uniform water recycling criteria for direct potable reuse).) It is the prescribed level of treatment required by CDPH pursuant to the uniform recycling criteria that transforms domestic wastewater from being legally considered a “waste” to being considered “recycled water” for regulatory purposes. (*See* CDPH’s recycling criteria at [www.cdph.ca.gov/HealthInfo/environhealth/water/Pages/Waterrecycling.aspx](http://www.cdph.ca.gov/HealthInfo/environhealth/water/Pages/Waterrecycling.aspx)). The District employs such a high level of treatment, the water produced is clearly “recycled water” as that term is defined in the Water Code, and is safe for indirect potable reuse as was determined by CDPH in its July 2013 Findings of Facts and Conditions adopted for the Project (“Conditions”). (*See* Draft Order at Findings 4 (describing the water produced by the District as “high quality advanced-treated recycled water”) and 10 (referencing CDPH’s Conditions).)

Per the Legislature’s expressly adopted language, if a recycled water project meets CDPH’s requirements and is acceptable based on protection of human health, the recycled water project should proceed without obstacle; in fact, water reclamation requirements may not even be required if both agencies (CDPH and the Regional Water Board) see no need to add to the existing regulatory requirements imposed by CDPH on a specific project. (*See* Water Code §13523(b) (“each regional board, after ... [consulting with CDPH] ... shall, if in the judgment of the board, it is necessary to protect the public health, safety, or welfare, prescribe water reclamation requirements for water that is used or proposed to be used for recycled water.”); *see also* Draft Order at Finding 28, *citing* the Recycled Water Policy, State Water Resources Control Board Resolution No. 2009-0011, (“Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment or permit conditions needed to protect human health.”) Here, the CDPH has issued its Conditions for the Project, to which the District will comply so as to protect the groundwater resources while providing a public benefit. Troubling, then, is the Draft Order, which conflicts with the Legislature’s clear distinction between the regulation of “waste” disposal and beneficial use of “recycled water,” and uses the concept of regulating “waste” as a justification for additional, unnecessary layers of regulatory requirements. The District presumes the Legislature’s repeated proclamations of the safety of recycled water (*see, e.g.,* Water Code § 13576) and the regulatory/permitting distinctions between “waste” disposal and “recycled water” use, are meaningful and should be upheld.

Moreover, the distinction between “waste” disposal and beneficial reuse of “recycled water” is critical to securing public acceptability of increased recycled water use. Given previous Legislative goals for water recycling, and the State Water Resources Control Board’s recently enunciated goal, as stated in the Recycled Water Policy, to increase the use of recycled water in the state over 2002 levels by at least 1,000,000 acre-feet per year by 2020 and by at least 2,000,000 acre-feet per year by 2030, promoting the safety and acceptability of recycled water is crucial. (See Water Code §§13560(a), 13577.) Refraining from calling recycled water a “waste” would aid in the pursuit of the State Water Resources Control Board’s goals, while at the same time ensuring consistency with law.

Other similarly situated projects have been permitted solely by water reclamation requirements. For example, in the Los Angeles region, water reclamation requirements were issued to the District, among others, for the groundwater recharge project at the Rio Hondo and San Gabriel River Spreading Grounds. (See Regional Water Board Order No. 91-100.) In the Santa Ana Region, after CDPH issued its Findings of Fact and Conditions, the Santa Ana Regional Water Board issued water reclamation requirements to the Orange County Water District for the Orange County Ground Water Replenishment System project, which did not include any reference to “waste” or impose “waste discharge requirements.” (See Order No. R8-2004-0002, as amended by R8-2008-0002). Thus, the District’s position enunciated in these comments is consistent with other regulatory actions taken throughout the State.

#### **Additional Support for the District’s Rationale and Requests:**

- Water Code section 13511 states “[t]he Legislature finds and declares that a substantial portion of the future water requirements of this state may be economically met by beneficial reuse of *recycled water*.” (emphasis added) Water Code section 13512 declares that “[i]t is the intention of the Legislature that the state undertakes all possible steps to encourage development of water recycling facilities so that *recycled water* may be made available to help meet the growing water requirements of the state.” (emphasis added).
- As early as 1974, California law provided that the State’s interest in conservation of water resources required the maximum reuse of reclaimed water<sup>3</sup> in the satisfaction of requirements for beneficial uses of water. (Water Reuse Law, Water Code Sections 461-465.) Under this law, the Department of Water Resources (“DWR”) was instructed to study the availability and quality of wastewater and the uses of reclaimed water for beneficial purposes, including, but not limited to, groundwater recharge, municipal and industrial use, irrigation use, and cooling for thermal electric power plants. (Water Code §462.) In 1977, the State Water Resources Control Board adopted **Resolution 77-1**, which echoed the findings set forth in Water Code section 13512 related to the State’s primary interest in the development of facilities to reclaim water containing waste to supplement existing surface and underground water supplies.
- In 1996, CDPH and the State Water Resources Control Board entered into a Memorandum of Agreement (MOA) regarding the use of reclaimed water. One of the

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<sup>3</sup> Under Water Code section 26, “recycled water” and “reclaimed water” have the same meaning as “recycled water” in Water Code section 13050(n).

primary missions of CDPH was “advising RWQCBs in the drafting of water reclamation requirements (permits),” and regional water boards were charged with the “issuance and enforcement of water reclamation requirements to producers and users of reclaimed water.” (See MOA at pg. 2.) This MOA stated that “[p]lanned indirect potable reuse of reclaimed water is commonly practiced in California through artificial ground water recharge with reclaimed water.” (See MOA at pg. 4.) Notably, the issuance of waste discharge requirements was not discussed.

- The State Water Resources Control Board adopted a Strategic Plan Update for 2008-2012, which included a priority to increase, by 2015, the amount of sustainable local water supplies (*e.g.*, recycled water) available for meeting existing and future beneficial uses by 1,725,000 acre-feet per year.
- In 2009, the State Water Resources Control Board adopted a statewide Recycled Water Policy (State Water Board Resolution No. 2009-0011) intended to ensure statewide regulatory consistency for recycled water projects and support the recycled water priorities set forth in the Strategic Plan. The Recycled Water Policy declares that “when used in compliance with this Policy, Title 22 and all applicable state and federal water quality laws, **the State Water Board finds that recycled water is safe for approved uses, and strongly supports recycled water as a safe alternative to potable water for such approved uses.**” (See State Water Board Resolution No. 2009-0011) (emphasis added)
- The Recycled Water Policy expressly states that: “**Groundwater recharge with recycled water** for later extraction and use in accordance with this Policy and state and federal water quality law **is to the benefit of the people of the state of California.**”
- In 2010, the Legislature adopted the Direct and Indirect Potable Reuse Law. (Water Code §§ 13560, *et seq.*) This law determined that the “use of recycled water for indirect potable reuse [IPR] is critical to achieving the state board’s goals for increased use of recycled water in the state” and that if “direct potable reuse [DPR] can be demonstrated to be safe and feasible, implementing direct potable reuse would further aid in achieving the state board’s recycling goals.” (Water Code §13560(c).)
- In January 2014, Governor Brown declared a Drought State of Emergency, and released a new Water Action Plan that encourages more effective management of sustainable water supplies. In April 2014, Governor Brown issued an Executive Order to strengthen the state’s ability to manage water and habitat effectively in drought conditions. The District’s Project will aid the Governor’s goals.

# **ATTACHMENT 2**



State of California—Health and Human Services Agency  
California Department of Public Health



RON CHAPMAN, MD, MPH  
Director & State Health Officer

EDMUND G. BROWN JR  
Governor

Mr. Samuel Unger, P.E.  
Executive Officer  
California Regional Water Quality Control Board  
Los Angeles Region  
320 W. 4<sup>th</sup> Street, Suite 200  
Los Angeles, CA 90013

July 12, 2013

Dear Mr. Unger:

**WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA ALAMITOS  
BARRIER RECYCLED WATER PROJECT – FINDINGS OF FACT**

The Water Replenishment District of Southern California (WRD) has submitted to this Department a Title 22 Engineering Report dated March 29, 2013 pertaining to the Alamitos Barrier Recycled Water Project (ABRWP). In addition, we have had multiple meetings and discussions with WRD about the expansion of the Leo J. Vander Lans Water Treatment Facility from 3 to 8 million gallons per day. On June 26, 2013, this Department held a public hearing in Lakewood, California, to consider the ABRWP and the Leo J. Vander Lans Water Treatment Facility expansion. Enclosed please find this Department's Summary of Public Hearing, Findings of Fact and Conditions for the ABRWP.

The ABRWP is a water supply and water quality improvement project that will produce highly treated recycled water for recharge by direct injection into the Alamitos Barrier Project. It will produce up to 8 million gallons per day of recycled water.

Source water will be disinfected tertiary wastewater from the Sanitation Districts of Los Angeles County Long Beach Water Reclamation Plant. The AWTF will feature advanced water treatment processes, including fine screening, microfiltration, reverse osmosis, ultraviolet irradiation including advanced oxidation, decarbonation, and pH stabilization.

As detailed in the Findings of Fact and Conditions, this Department considers the above treatment processes to be the best available treatment technology for recycled water used for groundwater recharge by direct injection. This Department finds that the proposed project complies with Section 60320 of Article 5.1, entitled

Mr. Samuel Unger, P.E.

Page 2

"Groundwater Recharge" of the California Code of Regulations, Title 22, Division 4, Chapter 3, entitled "Water Recycling Criteria". Furthermore, this Department finds that the proposed operation of the ABRWP will not degrade the quality of the water in the receiving aquifers as a source of domestic water supply provided that WRD meets all of the enclosed Conditions.

It is the recommendation of this Department that the California Regional Water Quality Control Board, Los Angeles Office, incorporate all of the enclosed Findings of Fact and Conditions into the water reclamation requirements to be issued to WRD for the ABRWP.

If you have any questions, please contact me at (559) 447-3130.

Sincerely,



Cindy A. Forbes, P.E., Chief  
Southern California Branch  
Drinking Water Field Operations  
State of California Department of Health Services

cc: Cathy Chang, WRD  
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## SUMMARY OF PUBLIC HEARING

In the Matter of:

Water Replenishment District of Southern California  
Expansion of Alamitos Barrier Recycled Water Project

On June 26, 2013, the California Department of Public Health (Department) held a public hearing in Lakewood, California to consider the proposed expansion of the Alamitos Barrier Recycled Water Project (ABRWP), which provides recycled water as a source of water supply to the existing Alamitos Barrier Project (ABP), a seawater barrier located between Los Angeles and Orange Counties, and is sponsored by the Water Replenishment District of Southern California (WRD). The purpose of the ABRWP expansion project is to help eliminate the use of imported potable water at the ABP, while ensuring the same level of protection of public health and safeguards against seawater intrusion.

A list of public hearing attendees is included in Attachment A.

### Hearing Officer

Cindy Forbes, P.E., Chief of the Southern California Branch, Drinking Water Field Operations, State of California Department of Public Health.

The Department made a presentation on the current and draft Groundwater Replenishment Reuse Regulations and how they pertain to this project. Next, the WRD staff made a presentation on the proposed ABRWP expansion project, including the planned augmentation of the production capacity of and treatment enhancements at the Leo J. Vander Lans Advanced Water Treatment Facility (LVLWTF), which produces the recycled water used at the ABP. Describing the background of and the need for the project expansion, they noted that the expansion will further improve the reliability of water supply to the existing seawater barrier, the ABP, and will also help the local region conserve local and imported water supplies. The expanded ABRWP will produce additional recycled water necessary to completely replace the imported potable water currently blended with recycled water for injection at the ABP. Details of the LVLWTF expansion were described, and water quality information and additional safeguards of the project to ensure protection of public health were provided. The WRD pledged their commitment to assure the highest water quality appropriate for this new water supply.

About 20 people were in attendance. The presentation was followed by a public comment period. There were no objections voiced concerning the project.

## FINDINGS OF FACT

1. Section 13540 of the California Water Code requires that recycled water may only be injected into an aquifer that is used as a source of domestic water supply if the California Department of Public Health (Department) finds that the recharge will not degrade the quality of water in the receiving aquifer as a source of water supply for domestic purposes.
2. The Water Replenishment District of Southern California (WRD) is a public agency formed in 1959 under the Water Replenishment District Act, originally adopted in 1955. It is responsible for the replenishment, protection, and preservation of groundwater supplies and quality in the Central Basin and West Coast Basin. Groundwater constitutes approximately 40 percent of the water demand needed for the nearly 4 million residents of the 43 southern Los Angeles County cities in the WRD service area. Since 1962, the WRD has been using recycled water as one source of supply to replenish the local groundwater basins by spreading and percolating water in nearly 900 acres of recharge facilities in the Montebello Forebay. Since 1995 and 2005, the WRD has also been purchasing recycled water for injection into the West Coast Basin and Central Basin, respectively, to mitigate seawater intrusion into the groundwater basins.
3. The County Sanitation Districts of Los Angeles County (CSDLAC) were formed under the County Sanitation Act, originally adopted in 1923, and are a confederation of independent special districts serving over 5 million people in Los Angeles County. The CSDLAC service area covers approximately 800 square miles and encompasses 78 cities and unincorporated areas within the County. The CSDLAC construct, operate, and maintain facilities to collect, treat, recycle, and dispose of sewage and industrial wastes and provide for the management of solid wastes, including disposal, transfer operations and materials recovery. Local sewers and laterals that connect to the CSDLAC trunk sewer lines are the responsibility of the local jurisdictions, as is the collection of solid wastes. The agency's 1,400 miles of main trunk sewers and 11 wastewater treatment plants convey and treat approximately 425 million gallons per day (mgd), 160 mgd of which are available for reuse in the dry Southern California climate. The Long Beach Water Reclamation Plant (LBWRP) and the Los Coyotoes Water Reclamation Plant (LCWRP) are owned and operated by the Joint Outfall System<sup>1</sup>.

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<sup>1</sup> Ownership and operation of the Joint Outfall System is proportionally shared among the signatory parties to the amended Joint Outfall Agreement effective July 1, 1995. These parties include County Sanitation Districts of Los Angeles County Nos. 1, 2, 3, 5, 8, 15, 16, 17, 18, 19, 21, 22, 23, 28, 29, and 34, and South Bay Cities Sanitation District of Los Angeles County.

4. The Los Angeles County Department of Public Works (LACDPW or the County) was formed on January 1, 1985, consolidating the former County Road Department, a portion of the County Engineer-Facilities, and the County Flood Control District. In 1995, it assumed the responsibility for capital projects from the County Internal Services Department. It is responsible for the design, construction, operation, maintenance, and repair of roads, bridges, airports, sewers, water supply, flood control, water quality, and water conservation facilities and for the design and construction of capital projects. Additional responsibilities include regulatory and ministerial programs for the County of Los Angeles, Los Angeles County Flood Control District (LACFCD), other special districts, and contract cities that request services. The County owns and operates the three seawater barriers in the County, including the Alamitos Seawater Barrier Project (ABP). In 2012, approximately 2.6 mgd of imported water and 2.1 mgd of recycled water were injected into 41 injection wells at the ABP to prevent seawater intrusion and to artificially recharge the Central Groundwater Basin of Los Angeles County and the Orange County Groundwater Basin, which are used as sources of domestic water supply in both counties.
5. The Orange County Water District (OCWD), with LACDPW, jointly constructed and co-owns the Alamitos Barrier Facilities and purchases the water injected into the Orange County side of the Barrier. The OCWD manages the groundwater basin under northern and central Orange County.
6. The WRD owns the Leo J. Vander Lans Water Treatment Facility (LVLWTF), which receives disinfected tertiary wastewater from the LBWRP owned and operated by the Joint Outfall System. Located at 7400 E. Willow Street, Long Beach, California, the LBWRP treats an average wastewater flow of approximately 18 mgd and is regulated under a National Pollutant Discharge Elimination System (NPDES) permit issued by the California Regional Water Quality Control Board, Los Angeles Region (LARWQCB), NPDES No. CA0054119, Order No. R4-2007-0047, CI No. 5662. The LBWRP provides primary, secondary and tertiary treatment and has a design capacity of 25 mgd.
7. Since 2005, the LVLWTF has been treating the disinfected tertiary effluent further, producing up to 3 mgd of advanced treated recycled water for blending with imported water. The blend is delivered and injected into the ABP. This injection activity is regulated under the Waste Discharge and Water Recycling Requirements (WDR/WRR) Order No. R4-2005-0061 issued by the LARWQCB and State Water Resources Control Board Order WQ 2006-0001. WRD is proposing to expand the production capacity of the LVLWTF from 3 mgd to 8 mgd in order to generate sufficient additional recycled water to replace the imported water currently being pumped into the ABP. The expanded LVLWTF will include some treatment enhancements and will continue to treat wastewater to meet drinking water maximum contaminant levels and other limits imposed on recycled water intended for groundwater replenishment. The LVLWTF expansion requires an amendment of the existing WDR/WRR permit.

8. In order to better meet the needs for additional source water at the expanded LVLWTF, disinfected tertiary wastewater from the LCWRP owned and operated by the Joint Outfall System may be used to supplement the existing supply from LBWRP. Located at 16515 Piuma Avenue, Cerritos, California, the LCWRP treats an average wastewater flow of approximately 30 mgd and is regulated under a NPDES permit issued by the LARWQCB, NPDES No. CA0054011, Order No. R4-2007-0048, CI No. 5059. The LCWRP provides primary, secondary and tertiary treatment and has a design capacity of 37 mgd.
9. The WRD has submitted an amended Title 22 Engineering Report and other supplemental information and responses to the Department comments pertaining to the LVLWTF expansion. The Title 22 Engineering Report has been reviewed and approved by the Department by letter dated April 4, 2013.
10. The treatment approach and technology used for the expanded ABRWP will consist of (the first two steps pertain to LBWRP/CSDLAC and the rest to the expanded LVLWTF):
  - Source Control: The CSDLAC maintains a comprehensive industrial pretreatment and source control program approved by the U.S. Environmental Protection Agency for control of waste discharges from industrial sources into the wastewater collection system.
  - Tertiary Treatment: Wastewater will be treated at the LBWRP. The treatment system consists of primary sedimentation, activated sludge biological treatment with nitrification and denitrification, secondary sedimentation, inert media filtration, and chlorine disinfection treatment processes. The design capacity of the LBWRP is 25 mgd. Disinfected tertiary effluent from the LBWRP will be the initial source water supplied to the ABRWP. (The LCWRP, with a design capacity of 37 mgd, provides a treatment process very similar to the LBWRP.)
  - Influent Equalization (EQ): If tertiary effluent from the LCWRP is used as influent to the LVLWTF, the flow will be equalized in the influent EQ basin and pump-fed to the Primary Microfiltration (MF) system. (Pumping is not required when disinfected tertiary effluent from the LBWRP is used as influent to the LVLWTF since the LBWRP effluent has 60 to 100 pounds per square inch (psi) of pressure, sufficient to feed Primary MF without pumping.)

- Microfiltration (MF):
  - MF Pretreatment Chemical Addition: If tertiary effluent before chlorination from the LCWRP is used for the LVLWTF influent, then chloramination (using sodium hypochlorite and aqueous ammonia) may be added to the equalized flow to control bio-fouling of the MF and reverse osmosis membranes. Additional chemical addition before MF filtration is unnecessary and will not be used if using Title 22 water from the LBWRP only.
  - Primary MF Automatic Strainers: Subsequently, the flows will be fed into three (two duty and one standby) automatic self cleaning 500-micron strainers to protect the downstream MF membranes from damage and/or fouling from large particles. The backwash waste from the Primary MF automatic strainers may be discharged to either the backwash waste (BWW) EQ basin or the plant waste EQ basin.
  - Primary MF System: Then the flow will be fed into six 100-module MF skids. The MF system consists of pressurized MF units with hollow fiber, polyvinylidene fluoride membranes having a maximum pore size of 0.1 micron. The MF system will produce 8.1 mgd. The MF filtrate will be stored in a break tank. The MF Units will be periodically backwashed to clean the membranes.
  - Backwash Treatment: The BWW flows from the Primary MF automatic strainers and Primary MF system will be equalized in the BWW EQ Basin and pumped to dissolved air floatation (DAF) system for treatment. Ferric chloride is utilized as coagulant injected upstream of the DAF system. DAF effluent flow will be equalized in the DAF Effluent EQ Basin and pumped to the Backwash Treatment (BWT) MF system, which consists of four 25-module MF skids. Similar to the Primary MF system, the BWT MF automatic strainer is provided upstream of the BWT MF membranes to protect the BWT MF membranes from damage and/or fouling from large particles. One automatic strainer will be provided as a duty unit, and one manual basket strainer will be provided as a standby. The Primary MF effluent and the BWT MF effluent will be mixed and discharged into the existing MF Filtrate Tank.
- Reverse Osmosis (RO): Stored MF filtrate will be pumped from the MF Filtrate Tank to the RO system, which will consist of two 2-stage RO trains in parallel and three (two duty and one standby) 3<sup>rd</sup> stage RO Trains. To control scaling of and to protect the RO membranes, the pretreatment (consisting of: addition of sulfuric acid for pH control, a threshold inhibitor; and cartridge filters) is provided both upstream of the two 2-stage RO trains and also immediately upstream of the 3<sup>rd</sup> stage RO process. The RO process will produce approximately 8.0 mgd, and consists of a high pressure feed pump

and pressure vessels. Each pressure vessel will contain high rejection thin film composite polyamide membrane elements. The entire RO system is designed for an overall 92 percent recovery rate. Permeate from the RO system will be fed to the advanced oxidation process (AOP). Concentrated brine from the RO system will be discharged directly to the Joint Outfall System sewer system.

- Advanced Oxidation Process (AOP): The AOP at the LVLWTF will consist of ultraviolet irradiation (UV) with hydrogen peroxide addition upstream of the UV trains. The UV/AOP is used to disinfect RO permeate and destroy constituents of emerging concern (CECs) that pass through RO membranes due to their low molecular weight and low ionic charge, notably N-Nitrosodimethylamine (NDMA), flame retardants, and 1,4-dioxane. The UV system conforms to the requirements delineated in the "Ultraviolet Disinfection Guidelines for Drinking Water and Water Reuse" (August 2012) published by the National Water Research Institute (NWRI). The UV system consists of the existing (pre-expansion) system as well as an add-on system. The existing UV system consists of nine 30AL50 Trojan UVPhox™ reactors that employ low-pressure, high-output technology, with each reactor containing 30 lamps, utilized in a tower arrangement with 3 reactors per level over 3 levels. The expansion will add two new trains of three stacked D72AL75 Trojan UVPhox™ reactor chambers, where the third reactor chamber in each train is redundant and includes only one (1) 72-lamp reactor zone. There are two reactor chambers in each UV vessel. The third vessel only utilizes one of the reactors. No waste will be generated. The total nominal capacity of the existing UV system is 8.0 mgd. At this flow rate and UV Transmittance of 95 percent, the delivered UV dosage from the proposed system is estimated to exceed 300 millijoule per square centimeter (mJ/cm<sup>2</sup>).
- Decarbonation: Following UV/AOP treatment, the water will pass through a decarbonator to reduce carbon dioxide, increase pH, and stabilize the product water.
- Post-Treatment Systems (pH Adjustment/Corrosivity Stabilization/Disinfection): Caustic soda (sodium hydroxide) will be added to the water to increase pH, and calcium chloride will be added to reduce the potential for minerals to be leached from the cement lining used in the transmission pipeline. In order to maintain a certain threshold of total chlorine residuals required by the LACDPW to prevent bio-fouling and clogging of the injection wells, sodium hypochlorite and aqueous ammonia will be added to the product water to maintain the required level of total chlorine residuals. The levels of sodium hypochlorite and aqueous ammonia to be added will be fine-tuned to effectively manage potential formation of disinfection byproducts.

The proposed project complies with Section 60320 of Article 5.1, entitled "Groundwater Recharge", of the California Code of Regulations Title 22, Division

4, Chapter 3, entitled “Water Recycling Criteria.” The Department considers the above treatment to be a best available treatment technology for recycled water used for groundwater replenishment by direct injection.

11. An effective source control program is currently administered by the CSDLAC to minimize the risk that wastewater treated at the LBWRP and LCWRP will be contaminated with toxic chemicals to protect the treatment facilities and downstream beneficial uses. This program may be expanded to include not only contaminants that may be detrimental to the facilities and the environment, but also include contaminants specified by the Department that may be harmful to human health and drinking water supplies. CSDLAC, through a comprehensive monitoring program, will be able to reasonably ensure that the recycled water produced at the ABRWP for recharge into the groundwater basins via injection at the ABP is not contaminated with toxic chemicals of industrial origin that are of concern to the Department in drinking water sources.
12. The WRD has developed an operating plan for the LVLWTF, which will be updated prior to startup of the expanded LVLWTF, per the operating parameters defined in section 14 (General Operations Plan) of the final amended Engineering Report approved by the Department.
13. The Draft Groundwater Replenishment Reuse Regulation requires that for a subsurface application project, the recycled water used as recharge water for a Groundwater Replenishment Reuse Project (GRRP) receives treatment that achieves at a total 12-log virus reduction and 10-log reduction in *Giardia* and *Cryptosporidium* to address the higher risk of pathogens in the recycled source water. The treatment system must consist of at least three separate treatment processes (as defined by the project sponsor). Each process can be credited with no more than a 6-log removal and must achieve at least a 1-log removal. For each month the recycled water is retained underground, the project can be credited with 1-log virus removal (up to 6-log removal). Process credit can be based on information in the literature, previously conducted studies, and other information considered relevant by the Department. The following table summarizes the pathogen reduction credits for the expanded ABRWP. Total pathogen removal credits are expected to exceed 10-logs for *Giardia* and *Cryptosporidium* and 12-logs for viruses.

**Pathogen Log Removal/Inactivation Requirements**

Pathogen	2013 Draft GWR Regulations Min	Proposed Pathogen LVLWTF Treatment Credits					Total Credits
		WRP <sup>a</sup>	MF	RO	UV/AOP	Travel time	
Giardia	10	2 <sup>b</sup>	2.7 <sup>c</sup>	1.5 <sup>c</sup>	6 <sup>d</sup>	0	12.2
Cryptosporidium	10	1 <sup>b</sup>	2.7 <sup>c</sup>	1.5 <sup>c</sup>	6 <sup>d</sup>	0	11.2
Viruses	12	2 <sup>b</sup>	N/A	1.5 <sup>c</sup>	6 <sup>d</sup>	6 <sup>a</sup>	15.5

Notes:

- a. WRP refers to the LBWRP and LCWRP.
  - b. To be conservative, WRD has only claimed pathogen removal credits associated treatment processes from influent through secondary treatment using the data shown in Table 5-3.a through Table 5-3.c in the final amended Title 22 Engineering Report.
  - c. Per discussions with the Department, based on membrane integrity and concomitant minimum reductions. Pathogen reduction credit for MF includes potential impact of backwash water recycle.
  - d. To be further confirmed by completing a limited scope phage study for the existing UV train.
  - e. The closest production well is greater than 6 months travel time.
14. The Draft Groundwater Replenishment Reuse Regulation also includes provisions for Response Retention Time (RRT) regarding the time recycled water must be retained underground between recharge and extraction to allow a project sponsor ample time to identify treatment failures and implement appropriate actions to protect public health from inadequately treated recycled water or recharge water. The minimum RRT allowed is 2 months. WRD has justified a RRT of 5 months. Because WRD is claiming a 6-log virus removal credit corresponding to an underground retention time of 6 months, the minimum required underground retention time for the recycled water is 6 months, the longer of the two retention times.
15. Since 1965, the County has operated the ABP by injecting imported potable water to prevent seawater intrusion into the Central Groundwater Basin of Los Angeles County and the Orange County Groundwater Basins. Since 2005, advanced treated recycled water from the LVLWTF has been injected at the ABP as well. In 2012, a total of 2,865 acre-feet (AF) of imported water and 2,336 AF of advanced treated recycled water were injected. The majority of injected water replenishes the inland aquifers, which are a source of municipal water supplies. 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 northwestern Orange County and the potential loss of this water resource.
16. The ABP is located at the southeastern end of the Central Groundwater Basin in Los Angeles County. Part of the ABP also extends into the adjacent Orange County Groundwater Basin in Orange County, which is the same groundwater basin as the Central Basin, but divided by the county line. Seven aquifers have been identified at the ABP, including, from the shallowest to the deepest, the Recent Zone, C Zone, B Zone, A zone, I Zone, Main Aquifer and the Lower Main Aquifer. The majority of the potable groundwater production near the ABP is from the Main Aquifer (also known as the Silverado Aquifer in the rest of the Central Basin), with lesser amounts from the B, A, I, and Lower Main. The Central Basin is bounded on the north by the Hollywood Basin and a series of low hills extending from the Elysian Hills on the northwest to the Puente Hills on the southeast. It is bounded on the west and south by the Newport-Inglewood uplift and on the east and southeast by the Los Angeles County - Orange County line. The Central Basin covers approximately 280 square miles and has

numerous Quaternary sedimentary aquifers to depths greater than 1,500 feet that transmit and store groundwater for potable, irrigation, and industrial use. Nearly 500 water wells are listed as active in the basin and extract groundwater up to the adjudicated amount of 217,367 acre-feet per year (AFY). Groundwater recharge to the basin is primarily at the Montebello Forebay spreading grounds located in the northeast portion of the basin. In addition, recharge is achieved through percolation of rainfall and applied water over the basin floor, groundwater underflow from adjacent basins, and from injection at the ABP. The basin is impacted by many variables including factors that are some distance from the proposed project. Some of these include drought, pumping patterns and volumes, new and existing extraction projects and amounts of recharge.

17. The ABP currently consists of 41 injection wells. Sixteen are single injection wells, injecting only into either the A or the I aquifer. Another 19 are dual injection wells, injecting separately into the A/I or C/B aquifers. The remaining six wells are composite wells, injecting simultaneously into C, B, A, and I aquifers. Distances between injection wells vary between about 50 feet to 1,200 feet, for a total span of approximately 1.2 miles. The OCWD is in the planning stages to construct eight additional injection well locations (20 separate casings) to better control seawater intrusion into the Orange County Groundwater Basin. Total injection rates for the eight new wells are anticipated to be approximately 1,011 AFY. The ABP also consists of four extraction wells located seaward of the injection wells. Prior to 2003, LACDPW operated the four extraction wells as additional hydraulic controls for seawater intrusion and to help remove salty groundwater from the Recent and I Zone aquifers. These wells were screened in the Recent Aquifer and I-Zone Aquifer and pumped on average approximately 1,000 AFY from the Recent Aquifer and 300 AFY from the I-Zone. Based on an extraction well efficiency study, which demonstrated that chloride levels tended to decrease during well shut off, the extraction wells were turned off in mid 2002/2003 and have since not been utilized. Minimum maintenance activities are performed on the wells' electrical systems, pumps, and screen condition so that they can be returned to operational status, if needed.
18. The WRD proposes to inject a maximum of 100 percent recycled water into the ABP. The percentage will be calculated based on the running monthly average recycled water contribution for the preceding period up to 120 months.
19. The closest active domestic water well to the ABP is SB-LEI (State Well No. 05S/12W-01A03) owned and operated by the City of Seal Beach and is located approximately 4,840 feet to the east of the ABP. Groundwater travels at different velocities in the different aquifers based on hydraulic gradients and hydraulic conductivity. The I-Zone aquifer tends to have the fastest moving groundwater in the ABP area. Tracer studies and groundwater models determined that recycled water will remain underground for approximately 4.3 years before reaching SB-LEI in the I-Zone. This estimated travel time is shorter than suggested by previous modeling since the new models were run with the current barrier

injection amounts and accounts for the anticipated increased injection by OCWD starting in 2014.

20. Pursuant to the WDR/WRR Order No. R4-2005-0061, policies and resolutions have been adopted to effectively prevent the use of groundwater for drinking water purposes within the aquifer treatment zone that has been established as no wells closer than 2,000 feet and less than 12 months underground retention time from the ABP. The policies and resolutions also prohibit the construction of new domestic water wells in the buffer zone. The existing buffer zone of 2,000 feet exceeds the response retention time (five months) and the travel time (six months, used for purposes of determining the pathogen removal credit of 6-logs for virus) described in the WRD's final amended Title 22 Engineering Report approved by the LARWQCB and the Department in April 2013. To be conservative, WRD will choose to continue to implement the existing policy of 2,000 feet buffer zone, but if necessary, may revise the existing policy to reflect a new buffer zone of six months underground retention time. This is important in order to achieve the necessary log reduction of organism density and to allow the project sponsor ample time to identify potential treatment failures and implement appropriate actions to protect public health from inadequately treated recycled water.
21. Currently, the following ten monitoring wells are used to monitor the underground movement of the recharge water and the water quality of various aquifers comprising the Groundwater basins. With the exception of Wells 503P and 503M, which monitor the background conditions, the remaining eight monitoring wells are used for compliance purposes.

Permit Compliance Wells				
<u>LACDPW Project No.</u>	<u>LACFCD Well No.</u>	<u>Distance from Barrier</u>	<u>Aquifer(s) Monitored and Interval (feet)</u>	<u>Well Use</u>
34LS	503BF	350 feet	C-Zone (136 – 181)	3-Month
34LS	503BE	350 feet	B-Zone (191 – 216)	3-Month
34HJ	502 BX	170 feet	A-Zone (304 – 334)	3-Month
34HJ	502 BW	170 feet	I-Zone (400 – 440)	3-Month
34L10	502AK	900 feet	Zone C	¼ Distance
34L10	502AL	900 feet	Zone B	¼ Distance
34L10	502AM	900 feet	Zone A	¼ Distance
34L10	502AN	900 feet	Zone I	¼ Distance
Background Monitoring Wells				
34'1	503P		Recent	Background
34'1	503M		Main	Background

22. A total of 220 observations wells are currently operating at the ABP. These wells are monitored regularly by the LACFCD for water levels and chloride concentrations to determine the effectiveness of the seawater barrier. The

monitoring wells tap the following aquifers, from shallowest to deepest: Recent, C, B, A, and I. WRD monitors the movement of the injected recycled water through the aquifers using 21 observation wells at 8 locations. The 21 observation wells include the eight monitoring wells, where routine, extensive water quality sampling is conducted pursuant to the WDR/WRR requirements, and the 13 tracer wells, whose primary function is to track the movement of the recycled water. Prior to project initiation, the Department concurred with WRD's proposal that the recycled water should be chemically distinct from the previously injected MWD imported potable water and native groundwater due to the advanced treatment process, particularly RO that produces water with much lower mineral content than the other waters. Therefore, certain properties of the recycled water can be used as a groundwater tracer to follow the recycled water movement and retention time. The Department allowed WRD a 6-month time frame to observe the recycled water in the tracer wells to prove that it could be used as a tracer. The First Annual Summary Report for 2006 submitted by WRD demonstrated that recycled water was observed at several of the tracer wells within the six-month time frame, and as a result, WRD continued to use recycled water as a groundwater tracer to monitor the movement and retention time of recycled water.

23. As part of the Tracer Program, groundwater samples were collected by WRD from all 21 observation wells prior to project startup for background concentrations, and then sampled the wells on a monthly basis following project initiation and continuing through the end of calendar year 2009. These wells are screened within each of the various aquifers into which injection occurs including the "I-Zone", the "A-Zone", the "B-Zone", and the "C-Zone" aquifers. The laboratory analysis performed on the samples included major cations and anions along with selected general physical parameters. Based on the groundwater sample results from the entire history of recycled water use at the ABP, recycled water is: likely present in four of the wells; possibly present in five of the wells, and absent from 12 of the wells as shown in the following table along with the time for recycled water to first appear at a well. The shortest estimated time of recycled water appearance is two to three months. The tracer tests performed from 2005 through 2009 demonstrated that the recycled water met all retention times. The WRD's Tracer Program ended in 2009, and no new additional tracer tests are planned for the expanded ABRWP.

**WRD Tracer Wells – Presence of Recycled Water and Estimated Travel Time**

LACDPW Project No.	LACFCD Well No.	Distance from Alamitos Barrier (feet)	Aquifer(s) Monitored	Recycled Water Present	Time to first appear
33ST	492BL	100	Zone A	Possibly	19 months
33XY	502BN	100	Zone A	Yes	6 months
33XY	502BM	100	Zone B	Yes	2 months
34F5	502BR	200	Zone A	Yes	6 months
34F5	502BU	200	Zone C	Yes	3 month
34L10	502AM	900	Zone A	Possibly	18 months
34L10	502AK	900	Zone C	Possibly	10 months
34LS	503BF	350	Zone C	Possibly	15 months
34TO.1	503AC	330	Zone A	Possibly	7 months
34HJ	502BW	170	Zone I	Absent	
34HJ	502BX	170	Zone A	Absent	
34LS	503BE	350	Zone B	Absent	
34L10	502AL	900	Zone B	Absent	
33ST	492BK	100	Zones B, C	Absent	
33ST	492BM	100	Zone I	Absent	
33XY	502BL	100	Zone C	Absent	
33XY	502BP	100	Zone I	Absent	
34F5	502BS	200	Zone B	Absent	
34JL	503AR	320	Zone C	Absent	
34TO.1	503AB	330	Zone B	Absent	

24. Results of sampling collected from the pilot studies simulating the expanded LVLWTF indicate that the product water will meet all requirements of the California Drinking Water Primary and Secondary Maximum Contaminant Levels (MCLs). Tests conducted on MF/RO/UV treatment processes also have indicated that certain pharmaceutically active compounds and other toxic contaminants not included in the drinking water standards are removed or reduced to low levels in the product water.

## CONDITIONS

Based on the above revised FINDINGS OF FACT, which are made pursuant to the information provided by the Water Replenishment District of Southern California (WRD) in the Title 22 Engineering Report on the Leo J. Vander Lans Water Treatment Facility (LVLWTF) Expansion: Alamitos Barrier Recycled Water Project (ABRWP) dated March 29, 2013, and the presentation by WRD and public comment at the Public Hearing held by the California Department of Public Health (Department), Drinking Water Field Operations Branch and WRD, on June 26, 2013, in Lakewood, California, the Department FINDS that the proposed changes to the existing operation of the Alamitos Barrier Project (ABP), existing operation of the County Sanitation Districts of Los Angeles County's (CSDLAC) Long Beach Water Reclamation Plant (LBWRP) and Los Coyotes Water Reclamation Plant (LCWRP), and the expanded LVLWTF will not degrade the quality of the water in the receiving aquifers as a source of domestic water supply PROVIDED ALL OF THE FOLLOWING CONDITIONS ARE MET:

1. The total volume of recycled water recharged by injection from the ABRWP shall not exceed 8.0 million gallons per day (mgd).
2. Treatment of recycled water intended for groundwater replenishment shall consist of primary sedimentation, secondary treatment (including nitrification/denitrification), granular media filtration, disinfection, microfiltration (MF), reverse osmosis (RO), and ultraviolet light (UV) with hydrogen peroxide addition to provide advanced oxidation process (AOP) treatment, with decarbonation and caustic soda addition as needed for pH adjustment and stabilization. Modifications to the treatment train as described in the March 29, 2013 Title 22 Engineering Report on the LVLWTF expansion were reviewed by the Department and the Los Angeles Regional Water Quality Control Board (RWQCB).
3. Recycled water used for injection shall be, at all times, adequately oxidized, filtered, disinfected, and subject to organics removal by RO and UV/AOP treatment. There shall be no bypassing of any treatment process, except for decarbonation and caustic soda addition, which provide pH adjustment as required for stabilization in Condition 2.
4. The advanced treatment process at the LVLWTF will include RO and an UV/AOP that, at a minimum, meet the following criteria: The RO membrane shall comply with ASTM method D4194-03 (2008), which achieves a minimum rejection of sodium chloride of no less than 99.0 percent and an average (nominal) rejection of sodium chloride of no less than 99.2 percent under the following condition:
  - Recovery: 15 percent
  - Temperature: 25C
  - Influent pH: between 6.5 and 8.5

- Sodium chloride rejection is based on three or more successive measurements, after flushing and following at least 30 minutes of operation having demonstrated that rejection has stabilized
  - An influent sodium chloride concentration of no greater than 2,000 mg/L, and
  - During the first 20-weeks of full-scale operation the membrane produces a permeate having no TOC concentration greater than 0.25 mg/L, 5% of the time, as verified through monitoring no less frequent than weekly.
5. The UV/AOP treatment system at the LVLWTF shall provide a sufficient oxidation process to provide no less than 0.5-log (69 percent) reduction of 1,4-dioxane. WRD will conduct spiking challenge testing to demonstrate the proposed oxidation process will achieve the minimum 0.5-log reduction under the proposed oxidation process's normal full-scale operating conditions. WRD shall establish surrogate and/or operational parameter(s) that reflect whether the minimum 0.5-log 1,4-dioxane reduction design criterion is being met. At least one surrogate or operational parameter shall be capable of being monitored continuously, recorded, and have associated alarms that indicate when the process no longer operates as designed.

Each quarter, WRD shall tabulate the percent of the monitoring results that did not meet the surrogate and/or operational parameter limits established to assure proper on-going performance of the RO and UV/AOP. If the calculated value is more than ten percent, within 30 days after the end of the quarter, the WRD shall submit a report to the Department and RWQCB describing the corrective actions planned or taken to reduce the percentage to ten percent or less; and consult with the Department and, if required by the Department, comply with an alternative monitoring plan approved by the Department.

6. The recycled water used as recharge water in the ABP shall receive pathogen reduction treatment that achieves at least 12-log enteric virus reduction, 10-log Giardia cyst reduction and 10-log Cryptosporidium oocyst reduction. The treatment train shall consist of at least three separate treatment processes. Each separate treatment process may be credited with no more than 6-log reduction. With the exception of retention time underground, each treatment process of the treatment train shall be validated for their log reduction by report or challenge tests. WRD has demonstrated that it achieves a 6-month underground retention time based on tracer tests. No further tracer tests are required. Each treatment process of the treatment train shall be validated for their log reduction by monitoring conducted pursuant to the Operations Plan or challenge tests. The Operations Plan shall specify that WRD will conduct on-going monitoring to verify the performance of each treatment process's ability to achieve its credited log reduction on a daily basis, with the results to be reported monthly.
7. If the pathogen reduction of the combined treatment trains is not met based on ongoing monitoring required in Condition 6, within 24 hours of being aware, WRD

shall initiate corrective actions. For failing to meet the pathogen reduction criteria for longer than 4 consecutive hours or more than 8 hours during any 7-day period, the Department and RWQCB shall be immediately notified. Failures of shorter duration shall be reported to the RWQCB no later than 10 days after the month in which the failure occurs. If the effectiveness of the treatment train's ability to reduce enteric virus is less than 9-logs, Giardia Cyst or Cryptosporidium oocysts is less than 8-logs, the use of recycled water shall be discontinued at the ABP and the Department and RWQCB shall be notified immediately.

8. WRD shall enter into an agreement with CSDLAC to ensure that a comprehensive industrial pretreatment and pollutant source control program implemented to prevent contaminants that might adversely impact the quality of the reclaimed water being produced by the LVLWTF from entering the sewer system. At a minimum the program shall include:
  - an assessment of the fate of Department and RWQCB-specified contaminants through the wastewater and recycled municipal wastewater treatment systems,
  - contaminant source investigations and contaminant monitoring that focus on Department and RWQCB-specified contaminants,
  - an outreach program to industrial, commercial, and residential communities within the portions of the sewage collection agency's service area that flows into the water reclamation facility subsequently supplying the ABP, for the purpose of managing and minimizing the discharge of contaminants at the source,
  - a current inventory of contaminants identified pursuant to this section, including new contaminants resulting from new sources or changes to existing sources, that may be discharged into the wastewater collection system; and
9. The monthly running average recycled water contribution (RWC) that is injected into the ABP may be up to 100% of the total water injected at the ABP. Any diluent water for the ABP shall be imported treated drinking water. For each month, a monthly running average RWC shall be determined by dividing the total volume of recycled water injected by the total volume of injection water associated with a time period not to exceed the preceding 120 months.
10. Analyses for contaminants having primary or secondary MCLs shall be performed by laboratories approved to perform such analyses by the Department utilizing Department-approved drinking water methods. Analyses for constituents other than those having a primary or secondary MCLs shall be described in the Operations Plan.
11. The recycled water injected shall meet all MCLs and other limits specified in the Drinking Water Quality and Monitoring Requirements, California Code of Regulations (CCR), Title 22, Chapter 15 and other limits as follows:

- Inorganic chemicals in Table 64431-A (except for nitrogen compounds);
- Radionuclides in Table 4, Section 64442 and 64443;
- Organic chemicals in Table 64444-A;
- Any new Federal or State maximum contaminant level upon adoption;
- Disinfection byproduct in Table 64533-A;
- Lead and copper; and
- Secondary maximum contaminant levels in Tables 64449-A and 64449-B ("Upper" levels).

Recycled water shall be monitored on a quarterly basis at regular intervals by analyzing a 24-hour composite or grab sample to determine compliance with primary MCLs referenced above for inorganic chemicals, radionuclides, organic chemicals, and disinfection byproducts, and lead and copper referenced above. Compliance shall be based on the running-annual average, calculated each quarter using the previous four quarters of data.

Each year, WRD shall collect at least one representative grab sample of the recycled municipal wastewater and have the sample(s) analyzed for the secondary drinking water constituents in Tables 64449-A and 64449-B.

If a result of the monitoring performed exceeds a contaminant's MCL or action level (for lead and copper), within 72 hours of notification of the result, WRD shall collect another confirmation sample.

For a contaminant whose compliance with its MCL or action level is not based on a running annual average, 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, WRD shall notify the Department and RWQCB within 24 hours of knowledge (of the exceedance or of the sampling lapse) 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, WRD shall notify the Department and RWQCB within 24 hours and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

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, WRD shall initiate weekly monitoring for the

contaminant until the running four-week average no longer exceeds the contaminant's MCL.

If the running four-week average exceeds the contaminant's MCL, WRD shall describe the reason(s) for the exceedance and provide a schedule for completion of corrective actions in the next quarterly report submitted to RWQCB with a copy provided to the Department.

If the running four-week average exceeds the contaminant's MCL for sixteen consecutive weeks, WRD shall notify the Department and RWQCB within 48 hours of knowledge of the exceedance and, if directed by the Department or RWQCB, suspend application of the recycled municipal wastewater.

With the exception of color, if an annual result of the monitoring performed for secondary drinking water constituents exceeds a constituent's secondary MCL in Table 64449-A or the upper limit in Table 64449-B, WRD shall initiate quarterly monitoring of the recycled municipal wastewater for the constituent, and if the running annual average of quarterly results exceeds a constituent's secondary MCL or upper limit, describe the reason(s) for the exceedance and any corrective actions taken in the next quarterly report submitted to RWQCB pursuant to section 60321, with a copy provided to the Department. The annual monitoring of secondary drinking water constituents in Tables 64449-A and 64449-B may resume if the running annual average of quarterly results does not exceed a constituent's secondary MCL or upper limit.

Since all of the past monitoring results for asbestos have been below the detection limit for asbestos, monitoring of the recycled water for asbestos may be performed once every three years. If asbestos is detected, quarterly monitoring shall be initiated. If four consecutive quarterly monitoring results for asbestos have been below the detection limit for asbestos, monitoring for asbestos may return to once every three years.

12. Any recycled water that may already be present in the groundwater because of on-going project related activities should be accounted for as a part of the total amount of recycled water in calculating the percent of recycled water in an aquifer.
13. The total nitrogen concentration of the ABP recycled water shall not exceed 10 mg/L as nitrogen. Total nitrogen shall be defined as the sum of ammonia, nitrite, nitrate, and organic nitrogen concentrations, expressed as nitrogen. WRD has sampled twice a week for total nitrogen and for the past 12 months, results show the total nitrogen is consistently below 5 mg/L and one-half the nitrate and nitrite MCL. WRD shall collect each week, one grab or 24-hour composite samples of the recycled water for total nitrogen analysis. If the total nitrogen concentration exceeds 10 mg/L as nitrogen, the laboratory must report the result to the WRD within 72 hours of completion of the analysis results and WRD will initiate

additional monitoring as described in the Operations Plan. If two consecutive samples exceed 10 mg/L total nitrogen, WRD shall notify the RWQCB and the Department, investigate the cause of the exceedance and take actions to reduce the total nitrogen concentration and investigate the groundwater basin to identify elevated concentrations and determine whether such elevated concentrations of nitrogen exceed or may lead to an exceedance of a nitrogen-based MCL. If the average of four consecutive samples collected exceeds 10 mg/L total nitrogen, suspend the subsurface application of recycled water. 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.

After such an exceedance event, total nitrogen samples (grab or 24-hour composite) shall be twice per week, at least three days apart between samples. WRD may reapply for the Department's approval of weekly monitoring based on the demonstration that the following conditions have been met for the most recent 12 months: (a) the average of all results did not exceed 5 mg/L total nitrogen; and (b) the average of a result and its confirmation sample (taken within 3 business days of receipt of the initial result) did not exceed 10 mg/L total nitrogen.

14. If necessary to supplement the recycled water injection with diluent water, WRD will utilize a Department-approved drinking water source as diluent water. As such, WRD shall be exempt from diluent water monitoring for nitrate and nitrite as long as a Department-approved drinking water source is utilized.
15. The Total Organic Carbon (TOC) concentration of the recycled water shall not exceed 0.5 mg/L based on the 20-week running average of all TOC results and the average of the last four TOC results. Each month, compliance shall be determined based on the running average of the most recent 20 samples and the average of the last four samples. Each week a grab or 24-hour composite sample of the recycled water shall be collected for TOC analysis. If the average TOC concentration exceeds 0.5 mg/L based on the 20-week running average, then injection of recycled water shall be suspended until at least two consecutive results, three days apart, are less than the limit. Within seven days of the suspension, the WRD shall notify the Department and RWQCB. Within 60 days of knowledge of a TOC limit exceedance, WRD shall submit a report to the Department and RWQCB describing the reasons for the exceedance and the corrective actions planned to avoid future exceedances. At a minimum, the corrective actions shall include a reduction of RWC sufficient to comply with the limit.
16. The turbidity of the RO feed water after the MF treatment 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. The turbidity of the RO feed water shall be continuously measured with an online turbidity meter and recorder, with at least one reading recorded every 1.2 hours. Compliance with the daily average turbidity shall be

determined based on using the recorded turbidity taken at intervals of no more than 1.2 hours over a 24-hour period. Should the continuous turbidity meter and recorder fail, grab sampling at a minimum frequency of 1.2 hours may be substituted for a period of up to 24 hours. The results of the daily average turbidity determinations shall be reported quarterly to the Department and the RWQCB. Whenever the turbidity limit is exceeded, the LVLWTF shall be shut down automatically and result in the suspension of injection of recycled water until such time that the cause of the high turbidity condition has been identified and corrected. Any failure to meet the turbidity performance requirements shall be reported to the Department and the RWQCB in the next monthly report.

17. Using online analyzers, the conductivity and TOC of the RO feedwater and RO product water upstream of the UV system shall be continuously measured and recorded. For both conductivity and TOC, daily minimum, maximum, average, and percent reductions based on daily average values shall be reported.
18. The recycled water intended for recharge via injection shall be disinfected such that the 7-day median number of total coliforms shall not exceed 2.2 total coliform bacteria per 100 milliliters (mL), and the number of total coliform organisms shall not exceed 23 total coliform bacteria per 100 mL in more than one sample in any 30-day period prior to injection. No sample shall exceed 240 total coliform bacteria per 100 mL. A grab sample shall be analyzed daily for total coliform bacteria. A failure to meet these requirements shall require a report describing the cause of the failure and the corrective actions taken to avoid future violations of these requirements. Failure to meet the 7-day median coliform requirement for two consecutive days shall result in the suspension of the injection of recycled water until such time the cause of the failure has been identified and corrected. Any failure to meet the total coliform requirements shall be reported to the Department and RWQCB in the next monthly report.
19. Each quarter or annually, samples of the recycled water shall be collected and analyzed as follows, and any results greater than analytical reporting levels (RLs) shall be reported to the Department and RWQCB in the next quarterly report:
  - Priority toxic pollutants (chemicals listed in the Water Quality Standards, Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, and 40 Code of Federal Regulations (CFR) Part 131, Federal Register 65 (97), May 18, 2000, p. 31682) specified by the Department based on the Department's review of the engineering report; and
  - Chemicals with state notification levels that the Department has specified based on the review of the engineering report; and
  - Chemicals the Department has specified, based on a review of the Engineering Report, the affected groundwater basin(s), and the results of the source control assessment.

The Department may request the WRD to further investigate results greater than RLs and identify, if appropriate, corrective actions. An investigation may include such actions as positive result confirmation, comparison to diluent water quality (if used), groundwater monitoring, source control and/or treatment.

The ABP has been in operation and conducted monitoring which has been evaluated by the Department and RWQCB. WRD has completed the initial quarterly monitoring. Reduced monitoring may continue as outlined in the Engineering Report, Section 13.

If a result is greater than an NL, within 72 hours of knowledge of the result, WRD shall collect another sample for the contaminant as confirmation. If the average of the initial and confirmation sample is greater than the contaminant's NL, or a confirmation sample is not collected and analyzed pursuant to this subsection, WRD shall initiate weekly monitoring for the contaminant until the running four-week average is less than the NL. If the running four-week average is greater than the contaminant's NL, WRD shall describe the reason(s) for the results and provide a schedule for completion of corrective actions in the next quarterly report submitted to RWQCB, with a copy provided to the Department. If the running four-week average is greater than the contaminant's NL for sixteen consecutive weeks, WRD shall notify the Department and RWQCB within 48 hours of knowledge of the exceedance and, if directed by the Department, suspend application of the recycled municipal wastewater.

20. The WRD shall monitor the performance of the UV treatment at the ABRWP for NDMA reduction by sampling the influent to the ABRWP quarterly for NDMA. The influent sampling to the ABRWP for NDMA may be incorporated into the NDMA sampling of the LBWRP and in the future LCWRP conducted by CSDLAC, provided that the sampling is performed using the same analytical method and laboratory.
21. To ensure that the LVLWTF meets all of the performance criteria for the purposes of protecting health, the WRD shall operate all equipment and facilities for treatment and recharge at levels of peak performance in order to limit the presence of contaminants in the recycled water.
22. Prior to startup of the expanded LVLWTF, WRD shall submit an Operations Plan to the Department and the RWQCB for approval. At a minimum, the Operations Plan shall identify the operations, maintenance, analytical methods, monitoring, and reporting of monitoring results to the Department and RWQCB. The monitoring procedures should be described for normal, start-up, off-spec and emergency conditions. The Operations Plan shall also include a contingency plan for off-spec water and an emergency response plan. The WRD shall operate its facilities in accordance with the approved Operations Plan. After six months of operation, the Operations Plan shall be updated as necessary and submitted

to the Department and RWQCB for review and approval. The Operations Plan shall cover critical operational parameters to include routine testing procedures for the MF, RO, and UV/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 LVLWTF, 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 LVLWTF, all treatment processes shall be operated in a manner to provide optimal reduction of microbial, regulated and nonregulated contaminants. Based on this experience and anytime operational changes are made, the Operations Plan shall be updated. The Operations Plan shall include staffing levels with applicable certification levels for ABRWP operations personnel. Significant changes in the operation of any of the treatment processes shall be reported to the Department and RWQCB. Significant changes in the approved Operations Plan must be approved by the Department and RWQCB prior to instituting changes. WRD shall be responsible for ensuring that the Operations Plan is, at all times, representative of the current operations, maintenance, and monitoring of the ABRWP.

23. At the ABP, the recycled water shall be retained in the groundwater basins for a minimum of 6 months prior to being withdrawn at a domestic water supply well based on information provided in Section 5 (Pathogen Microorganism Control) of the Engineer Report. A numerical model and tracer study has been completed, whose results verified the retention and response time is adequate prior to the recycled water reaching the nearest domestic water supply well. WRD shall monitor the ABP and area between the barrier and the nearest domestic wells. If additional extraction wells are utilized in the future that would alter the flow path of the recycled water or the speed in which the recycled water travels, the numerical model and possibly additional tracer testing would need to be conducted for recalibration.
24. WRD shall maintain ordinances, resolutions, and policies that effectively prevent within the area required to achieve 6 months underground retention and response time from the ABP, the use of groundwater for drinking water purposes and construction of any domestic supply wells.
25. Groundwater monitoring to detect the influence of the recycled water injection operation at the ABP shall be performed. Monitoring wells have been sited at a location within approximately three months travel time of the ABP injection wells and at additional intermediate points between the ABP and the nearest downgradient domestic water well, and such that samples can be obtained independently from each aquifer potentially conveying the recharge water.

26. Two sets of nested (multi-depth) groundwater monitoring wells (3-month and ¼ distance wells) have been located between the ABP injection wells and the nearest domestic water supply well, City of Seal Beach SB-LEI. WRD has conducted previous tracer monitoring and determined the travel time from the Barrier to SB-LEI is approximately 4.3 years. The 3-month underground travel time monitoring wells are 503BF in the C-Zone, 503BE in the B-Zone, 502BX in the A-Zone and 502BW in the I-Zone. The ¼ distance monitoring wells which are located approximately quarter distance from the Barrier to the SB-LEI are 502AK for the C-Zone, 502AL for the B-Zone, 502AM for the A-Zone, and 502AN for the I-Zone. WRD has conducted and submitted the baseline groundwater monitoring for the monitoring wells prior to project startup. WRD will also utilize wells 503P, recent aquifer, and 503M, main aquifer, as background monitoring for aquifers that recycled water is not injected into.

27. The groundwater monitoring program shall be periodically reviewed and modified based on results of the monitoring program. Changes to the monitoring program, including well locations, shall be approved by the Department and the RWQCB. The groundwater monitoring program will be implemented in accordance with Section 13.7 of the March 29, 2013 Title 22 Engineering Report approved by the Department.

If a result from the monitoring conducted above exceeds 80 percent of a nitrate, nitrite, or nitrate plus nitrite MCL, WRD shall, within 24 hours of being notified of the result by the laboratory, collect another sample. If the average of the result of the initial sample and the confirmation sample exceed the contaminant's MCL, WRD shall within 24 hours of being notified by the laboratory of the confirmation sample result, notify the Department and RWQCB and discontinue subsurface application of recycled municipal wastewater until corrective actions have been taken or evidence is provided to the Department and RWQCB that the contamination was not a result of the ABRWP.

28. The WRD shall submit all water quality data associated with groundwater monitoring in a format acceptable to the Department and the RWQCB. Analytical results shall be reported electronically using the format prescribed by the RWQCB.

29. The WRD shall submit, no later than six months after the end of each calendar year, a report to the Department, the RWQCB, and any public water systems having downgradient sources potentially affected by the ABP and within 10 years travel time shall be notified by direct mail and/or electronic mail of the availability of the report. The report shall be prepared by an engineer licensed in California and experienced in the fields of wastewater treatment and public water supply. The annual report shall include:

- a summary of the ABP and ABRWP's compliance status with the applicable monitoring requirements during the previous calendar year;
- For any violations during the previous calendar year;

- the date, duration, and nature of any violation;
  - a summary of any corrective actions and/or suspensions of subsurface application of recycled municipal wastewater resulting from a violation; and
  - if uncorrected, a schedule for and summary of all remedial actions,
  - any detections of monitored chemicals or contaminants, and any observed trends in the monitoring wells and diluent water supplies;
  - information pertaining to the vertical and horizontal migration of the recharge water plume;
  - a description of any changes in the operation of any unit processes or facilities;
  - the estimated quantity and quality of the recycled municipal wastewater and diluent water to be utilized for the next calendar year;
  - increases in RWC during the previous calendar year and RWC increases anticipated for the current calendar year; and
  - a summary of the measures taken to provide an effective source control program and the effectiveness of the implementation of the measures.
30. WRD already has in place and shall continue to maintain a resolution adopted by its governing board ensuring that it will be responsible for developing a plan for providing an alternative source of domestic water supply, or a Department approved treatment mechanism, to any user whose domestic water well is found to violate California drinking water quality regulations as a direct result of the ABP or ABRWP, or when the Department makes an analysis and finding that the domestic water well is unsuitable for human consumption as a direct result of the ABP or ABRWP, which will include failure to meet Condition 11 above. Alternative sources may include water delivered for blending of the production well, imported water, water produced at a well head treatment plant, and water produced from new wells.
31. The WRD shall provide an update to the 2013 Title 22 Engineering Report every five years after startup of the expanded LVLWTF to the Department and the RWQCB.

Provided that WRD meets all of the above conditions and findings of fact, the Department finds that the ABRWP can provide injection recharge water that will not degrade the groundwater basins as a source of water supply for domestic purposes.

July 12, 2013  
Date

Cindy Forbes  
Cindy Forbes, P.E.  
Chief of the Southern California Branch  
Drinking Water Field Operations Branch  
California Department of Public Health  
Hearing Officer



Attachment A  
Attendees of Public Hearing

<u>Name</u>	<u>Affiliation</u>
Cindy Forbes	State Department of Public Health
Kurt Souza	State Department of Public Health
Jeff O'Keefe	State Department of Public Health
Oliver Pacifico	State Department of Public Health
Ted Johnson	Water Replenishment District of Southern California
Cathy Chang	Water Replenishment District of Southern California
Jim McDavid	Water Replenishment District of Southern California
Thomas Martin	Water Replenishment District of Southern California
Tracy Burke	Water Replenishment District of Southern California
Jeff Henderson	Water Replenishment District of Southern California
Everett Ferguson	Water Replenishment District of Southern California
Vanessa Robles	Water Replenishment District of Southern California
Jason Dadakis	Orange County Water District
Doug McPherson	United States Bureau of Reclamation
Ann Heil	County Sanitation Districts of Los Angeles County
Margie Nellor	Nellor Environmental Associates, Inc.
Bruce Chalmers	CDM Smith
Debbie Burris	DDB Engineering, Inc.
Kate Nutting	Golden State Water Company

# **ATTACHMENT 3**

### **Attachment 3:**

The Draft Order imposes a variety of unnecessarily duplicative or contradicting requirements applicable to the operation and use of the District's recycled water facilities by both incorporating CDPH's July 2013 Findings of Facts and Conditions (*see, e.g.*, Draft Order at Section II), and then either separately prescribing the same conditions or prescribing distinct conditions that may create confusion in implementation and/or enforcement. This action is not reasonable, and thus contradicts the overriding mandate set forth in Water Code section 13000. Further, such action unnecessarily exposes the District to escalated enforcement for the same circumstance, as each provision of the permit is independently enforceable.

# **ATTACHMENT 4**

**Attachment 4**  
**Talking Point # 4 (Project Mischaracterization / Unfavorable Depiction of Project)**  
**Impacts of Recycled Water on Groundwater for Regulated Constituents**  
**Findings 23, 24, and 25**

**Finding 23**

“Finding 23. Drinking water standards have not been exceeded at the nearest drinking water well, Seal Beach well SB-LEI as a result of the injection project, as shown by the Title 22 drinking water reports. However, recycled water is thought to have reached the well since injection began in 2005. The SB-LEI well is perforated in both Zone I, which is recharged at the Barrier, and the Main Aquifer, which contains no recycled water. As a result, it is possible that changes to water quality from recycled water contributions have not been detected because of dilution from deeper horizons.”

**Comment:** The information regarding SB-LEI perforations and comingling of recycled water is incorrect. Well SB-LEI is screened across the I aquifer, which receives recycled water, and the Main and Lower Main aquifers, which do not receive recycled water. Thus the produced water is blended with the water from all three aquifers thereby reducing the recycled water concentration at the well head. Section 10.4.1 of the 2013 Engineering Report states:

“The shallowest aquifer is the Recent Aquifer; no water is injected into this aquifer and no drinking water is extracted from this aquifer. The other underlying aquifers, in order of increasing depth, are the C-Zone, B-Zone, A-Zone, and I-Zone, followed by the Main and Lower San Pedro Aquifers. Drinking water from the nearest production well, City of Seal Beach Well SB-LEI, is pumped from the I-Zone, Main, and Lower San Pedro Aquifers.” See page 10-16

**Recommended Revision to Findings 23: see redline edits in revised tentative order.**

**Findings 24 and 25**

“Finding 24. The 2005 Order required collection of monitoring data before the start of injection of recycled water into the Barrier, and annual assessment of data collected thereafter. Of 230 constituents measured at ten monitoring wells, most stayed constant or improved in comparison to background groundwater quality information collected in 2005 and 2006. Aquifer concentrations of arsenic and selenium increased, from non-detect to a maximum of 22 mg/L (which is above the MCL of 10 mg/L) and from non-detect to a maximum of 61 mg/L (which is above the MCL of 50 mg/L), respectively. Chloride, total dissolved solids (TDS), and manganese all showed variations above and below background levels as water quality was restored with the prevention of sea water intrusion. Odor and total coliform appear at levels above background in the deepest aquifer receiving injected water in monitoring wells located a year of travel time from the Barrier. In addition, n-Nitrosodimethylamine (NDMA) concentrations rose in the wells at the Barrier after injection of recycled water began.

<b>Table 1 – INCREASES IN GROUNDWATER CONCENTRATION MEANS</b>					
<b>Constituents (MCLs or other standard)</b>	<b>Units</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2005 or 2006 Background</b>
3 month travel time in Recent aquifer					
Arsenic (10)	µg/L	17	22	16	ND
Selenium (50)	µg/L	61	53	35	ND
Chloride (500)	mg/L	7025	6275	5475	5407
TDS <sup>1</sup> (1,000)	mg/L	13500	13000	9925	13350

<b>Table 1 – INCREASES IN GROUNDWATER CONCENTRATION MEANS</b>					
<b>Constituents (MCLs or other standard)</b>	<b>Units</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2005 or 2006 Background</b>
3 month travel time in C-Zone					
Manganese (50)	µg/L	101	108	97	94
Odor(3)	TON	11	2	3	4
3 month travel time in B-Zone					
Manganese (50)	µg/L	62	62	61	68
Odor(3)	TON	3	2	1	4
Total Coliform(1.1) <sup>2</sup>	MPN/100mL	ND-1.1	ND	ND	ND
3 month travel time in I-Zone					
Odor	TON	14	3	3	5
1 year travel time in C Zone					
Manganese (50)	µg/L	101	113	98	95
Odor(3)	TON	3	2	3	7
1 year travel time in B Zone					
Manganese (50)	µg/L	63	66	63	77
Odor	TON	3	2	3	6
1 year travel time in I Zone					
Odor(3)	TON	3	2	1	4
Total Coliform(1.1)	MPN/100mL	ND-1.1	ND	ND	ND

<sup>1</sup> Total dissolved solids.

<sup>2</sup> Basin Plan limit is 1.1 MPN/100 mL.

“Finding 25. Based on the review of the recycled water monitoring data for the past five years (2009-2013), the highest concentration detected in recycled water for chloride, TDS, manganese, and odor are 28 milligrams per liter (mg/L), 110 mg/L, 2.7 micrograms per liter (µg/L) and 4 threshold odor number (TON), respectively. Arsenic and selenium have not been detected in the recycled water injected at the Barrier.

**Comment:** Findings 24 and 25 imply that recycled water has adversely impacted groundwater, disregarding and/or misrepresenting information presented in the 2013 approved Engineering Report. These finding do not provide sufficient detail to summarize the monitoring well water quality data, and in some cases is misleading by (1) not delineating that there are two wells that continue to monitor background conditions, (2) not explaining or taking into consideration the number of samples, data ranges, standard deviations of data, etc.; (2) not clarifying which zones receive do and do not receive injected water to put the information into context; (3) not considering if analytical detection levels or reporting levels have changed during the monitoring periods that would impact judgments regarding if a trend is occurring or not; and (4) not considering if differences in data are statistically significant. In addition, we do not understand what is meant by “stayed constant or improved in comparison to background groundwater quality information.”

A considerable amount of information on recycled water and groundwater quality was presented in the approved 2013 Engineering Report for regulated constituents and Notification Levels.

As described in Section 7.1 of the 2013 approved Engineering Report, recycled Water has met MCLs and Basin Plan objectives.

“A review of the 2007 - 2011 water quality data for the recycled water showed that all primary and secondary MCLs have been consistently met, with the exception of perchlorate on a single isolated occasion. In November 2007, a recycled water sample reported 11 µg/L of perchlorate, above the newly established MCL of 6 µg/L. The sample was re-analyzed and was below the RL of 4 µg/L; however, the sample had exceeded the hold time. Other than this anomaly, which may have been due to a laboratory error, recycled water fully complied with all primary and secondary MCLs. Perchlorate has not been detected in the groundwater monitoring wells associated with the ABP or at the nearest domestic water supply well, City of Seal Beach Well SB-LEI.” See page 7-4

“A review of the 2007 - 2011 water quality data for the recycled water showed that all WDR/WRR limits based on the LARWQCB’s Basin Plan Objectives have been consistently met, with the exception of pH on a few occasions. The recycled water has a pH limit of 6.5 to 8.5. All pH results have since been within the limit, except for a short duration in the first quarter of 2007, during a plant restart following a brief shutdown for repair. The RO Pilot Study results had one pH result below 6.5; however, the samples were collected prior to pH adjustment, which is part of the LVLWTF treatment process. Therefore, the recycled water produced at the expanded LVLWTF is expected to consistently achieve the pH limit of 6.5 to 8.5.

To date, mineral constituents (TDS, sulfate, chloride, and boron) in the recycled water have not exceeded the limits based on the Basin Plan Objectives, and total coliform has not been detected in the recycled water.” See page 7-4

As described in Section 10.4, Appendix B-7, and Appendix B-9 of the 2013 approved Engineering Report, the groundwater quality has been improved by the Project:

“A detailed review of groundwater quality data in Appendix B-7 for the ABP area indicates that in general, water quality is within primary and secondary drinking water standards. Exceedances were most commonly observed in the Recent Aquifer, the shallowest aquifer, which has never received recycled water. Specifically, chloride, TDS, sulfate, turbidity, specific conductance, color, arsenic, iron, manganese, and selenium were present in elevated concentrations (i.e. levels above the corresponding MCLs or limits based on LARWQCB’s Basin Plan Objectives) in the Recent Aquifer. All of these constituents were present during the 2005 initial background monitoring (pre-injection period) in similar concentrations except for arsenic and selenium, which have increased since 2005. Arsenic and selenium in the recycled water has consistently not been detected. As such, elevated levels of arsenic and selenium concentrations are attributed to sources other than injected water such as background concentrations. In the C-Zone, B-Zone, A-Zone, and I Zone Aquifers, manganese has been measured at elevated concentrations, however in concentration ranges similar to the 2005 initial background monitoring, thus indicative of ambient conditions. In the Main Aquifer, only chloride, specific conductance, and TDS were consistently observed at elevated concentrations (indicative of influence of seawater intrusion) but generally showing a decreasing trend from the 2005 initial background monitoring, thus indicative of improved groundwater quality in the aquifer as a result of the injection project.” See page 10-17

Appendix B-9 in the approved 2013 Engineering Report provides the Title 22 data for Well SB-LEI for calendar years 2007 to 2011, collected and reported by the water purveyor to CDPH. Based on a detailed review of the data, water from Well SB-LEI is of high quality and has consistently met the applicable drinking water standards, with a few minor exceptions for color and/or odor in 2007, 2008, and 2011 as shown in the table below. However there is no substantive difference in water quality between pre-injection conditions (as represented by years 2007 and 2008) and post injection (as represented by year 2011).

<b>Secondary MCL</b>	<b>Limit</b>	<b>2007</b>	<b>2008</b>	<b>2011</b>
Color, Units	15	35	13	20
Odor, TON	3	8	4	2
TON = Threshold Odor Number				

Based on this information, Table 1 is incorrect, as there is no basis for any increases in groundwater concentration due to the Project, and should be deleted.

Monitoring Wells

As currently drafted, Findings 24 and 25 do not provide sufficient detail on the monitoring well network and the tracer work previously conducted that eliminates the need for WRD to conduct additional tracer studies as discussed in CDPH Finding #22.

**Recommended Revisions to Findings 24 and 25: see redline edits in revised tentative order.**

# **ATTACHMENT 5**

## Attachment 5

### **Talking Point #10 (Impending Statewide Change in Potable Water Reuse Regulation and Permitting) Findings 26, 29, 30 and Provision III**

“Finding 26. State authority to oversee recycled water use is shared by CDPH, the State Water Board, and the Regional Water Boards. CDPH<sup>3</sup> is the agency with the primary responsibility for establishing water recycling criteria under Title 22 of the Code of Regulations 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 reclamation requirements for water that is used or proposed to be used as recycled water.”

“Footnote 3. Any successor agency to CDPH’s responsibilities to oversee groundwater replenishment with recycled water in aquifers designated as sources of drinking water shall be substituted in place of every reference to CDPH in the conditions and requirements of this Order, and in the findings of this Order where appropriate.”

“Finding 29. A 1996 Memorandum of Agreement (MOA) between CDPH 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.”

Finding 30. Section 13523(a) of the Water Code provides that a Regional Water Board, after consulting with and receiving recommendations from CDPH, 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. Pursuant to Water Code section 13523, the Regional Water Board has consulted with CDPH and received its recommendations. On June 26, 2013, CDPH held a public hearing to consider the proposed expansion of the Vander Lans WTF and use of recycled water for the Barrier. On July 12, 2013, CDPH transmitted to the Regional Water Board its Findings of Fact and Conditions concerning the expansion of the Vander Lans WTF.

Provision III. Reopener – includes conditions for reopening the Order.

**Comment:** These findings and footnote 3 do not acknowledge impending changes that will affect approval and permitting of groundwater replenishment projects. Effective July 1, 2014:

- The California Department of Public Health (CDPH) Drinking Water Program, including recycled water responsibilities, will be moved to the State Water Resources Control Board’s (State Water Board’s) new Division of Drinking Water per the March 2014 *Drinking Water Reorganization Transition Plan* (Transition Plan) [http://www.waterboards.ca.gov/drinkingwater/docs/transition\\_plan\\_fullversion.pdf](http://www.waterboards.ca.gov/drinkingwater/docs/transition_plan_fullversion.pdf), hereby incorporated by reference. As a result of the reorganization, the MOA for potable reuse projects would no longer be valid.

As stated in the Transition Plan:

“The creation of the Division of Drinking Water within the State Water Board creates a unique opportunity to combine these responsibilities in one agency to achieve the State’s water recycling goals.” See page 20

“The personnel in the Drinking Water Program working on recycled water issues would be organized under the new Division of Drinking Water, providing continued public

health management. Under the State Water Board, the Recycled Water public health recommendations would continue to be coordinated into Water Board permits. In addition, the Administration will propose language for the Legislature to consider that provides the Division of Drinking Water the authority to issue permits for potable reuse of recycled water; Task Force members expressed support for this concept.” See page 20

- In accordance with Senate Bill 104 that adds section 13562.5 to the Water Code, CDPH must adopt the groundwater replenishment regulations by June 31, 2014 as emergency regulations without Office of Administrative Law review. See [http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb\\_0101-0150/sb\\_104\\_bill\\_20140301\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/13-14/bill/sen/sb_0101-0150/sb_104_bill_20140301_chaptered.pdf) Per a meeting held on May 9, 2014, with CDPH, WaterReuse, and recycling stakeholders, CDPH intends to revise specific sections of the June 2013 Draft Regulations as part of the emergency regulations (including compliance with Notification Levels). Thus, after June 30, 2014, the Order should be reopened to include the adopted CDPH groundwater replenishment regulations.
- Before the tentative permit is considered by the Regional Water Board, it is expected that legislation will be adopted providing the new State Water Board Division of Drinking Water with the authority to issue potable reuse permits by July 1, 2014. There are ongoing discussions at the State Water Board level on how potable reuse permitting will be implemented. As stated in the Transition Plan:  
“The Administration proposes to give the Deputy Director of the Division of Drinking Water the authority to grant or deny potable water reuse permit applications; Task Force members expressed support for this proposal.”

With regard to the Reopener Provisions in the tentative Order, WRD would appreciate a response from the Regional Water Board on how permit reopeners will be administered given the forthcoming changes in permitting responsibility as described above. WRD would want this Order to be consistent with other groundwater replenishment Orders administered by the Division of Drinking Water.

**Recommended Revisions: see redline edits in revised tentative order.**

# **ATTACHMENT 6**

**Attachment 6**  
**Inconsistency with Recycled Water Policy**  
**Finding 28**

“Finding 28. 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 reuse of recycled water from municipal wastewater sources in a manner consistent with state and federal water quality laws and regulations. The Recycled Water Policy describes the respective authority of CDPH and the Regional Water Boards as follows:

*Regional Water Boards shall appropriately rely on the expertise of CDPH for the establishment of permit conditions needed to protect human health. (section 5.b)*

*Nothing in this paragraph shall be construed to limit the authority of a Regional Water Board to protect designated beneficial uses, provided that any proposed limitations for the protection of public health may only be imposed following regular consultation by the Regional Water Board with CDPH, consistent with State Water Board Orders WQ 2005-0007 and 2006-0001. (section 8.c)*

*Nothing in this Policy shall be construed to prevent a Regional Water Board from imposing additional requirements for a proposed recharge project that has a substantial adverse effect on the fate and transport of a contaminant plume or changes the geochemistry of an aquifer thereby causing dissolution of constituents, such as arsenic, from the geologic formation into groundwater. (section 8.d)*

In addition, the Policy notes the continuing obligation of the Regional Water Boards to comply with the state’s anti-degradation policy, Resolution No. 68-16:

*The State Water Board adopted Resolution No. 68-16 as a policy statement to implement the legislature’s intent that waters of the state shall be regulated to achieve the highest water quality consistent with the maximum benefit to the people of the state. (section 9.a)”*

**Comment:** The finding does not address relevant elements of the Recycled Water Policy in terms of (1) the impact of the Project related to dissolution of chemicals; and (2) the impact of the Project on contaminant plumes, both of which were addressed in the 2013 approved Engineering Report.

**Dissolution of Chemicals**

As discussed in the approved 2013 Engineering Report:

“Because the same volume of water will be injected and because chemical stabilization will be applied to the final recycled water prior to injection, the LVLWTF expansion will not affect the fate and transport of any contaminant plume or change the geochemistry of the recharged aquifers causing dissolution of constituents from natural geologic formations into the groundwater.” See page 12-9

Increases in groundwater aquifers, such as arsenic, are attributed to salt water intrusion as discussed in Section 10.4.1:

“A detailed review of groundwater quality data in Appendix B-7 for the ABP area indicates that in general, water quality is within primary and secondary drinking water

standards. Exceedances were most commonly observed in the Recent Aquifer, the shallowest aquifer, which has never received recycled water. Specifically, chloride, TDS, sulfate, turbidity, specific conductance, color, arsenic, iron, manganese, and selenium were present in elevated concentrations (i.e. levels above the corresponding MCLs or limits based on LARWQCB's Basin Plan Objectives) in the Recent Aquifer. All of these constituents were present during the 2005 initial background monitoring (pre-injection period) in similar concentrations except for arsenic and selenium, which have increased since 2005. Arsenic and selenium in the recycled water has consistently not been detected. As such, elevated levels of arsenic and selenium concentrations are attributed to sources other than injected water such as background concentrations. In the C-Zone, B-Zone, A-Zone, and I Zone Aquifers, manganese has been measured at elevated concentrations, however in concentration ranges similar to the 2005 initial background monitoring, thus indicative of ambient conditions. In the Main Aquifer, only chloride, specific conductance, and TDS were consistently observed at elevated concentrations (indicative of influence of seawater intrusion) but generally showing a decreasing trend from the 2005 initial background monitoring, thus indicative of improved groundwater quality in the aquifer as a result of the injection project." See page 10-17

#### Impact on Contaminant Plumes

As discussed in Section 12.5 of the approved 2013 Engineering Report, as part of an effort to manage and protect the basins, WRD established its Groundwater Contamination Prevention Program. Elements of this program include the (a) Central and West Coast Basin Groundwater Contamination Forum, (b) identification of the high-priority contaminated sites within the District, and (c) the Abandoned Wells program. Under the Groundwater Contamination Prevention Program, WRD has been working with regulatory agencies including the Regional Water Board, U.S. Environmental Protection Agency, and the California Department of Toxic Substances Control for each of the high-priority contaminated groundwater sites to keep abreast of their status, offer data collection, review and recommendations as needed, and facilitate progress in site characterization and cleanup. Based on information generated as part of this effort, there is no evidence to suggest any adverse impact of the Alamitos Barrier Project on contaminant plumes. Because the same volume of water will be injected, the Facility expansion will not affect the fate and transport of any contaminant plume.

**Recommended Revision: see redline edits in revised tentative order.**

# **ATTACHMENT 7**

## Attachment 7

### **Todd Groundwater – Model Run Based on 10 mg/L Nitrate (as N) from the Expanded Leo J. Vander Lans Advanced Water Treatment Facility (Facility) Finding 30 and New Finding for III.4, Provision IV.3, MRP IV.3**

With regard to long term impacts on groundwater quality if recycled water from the Facility was injected at the Alamitos Gap Barrier (AGB) at a nitrate concentration of 10 mg/L-nitrogen, Todd Groundwater conducted a specific modeling run using the Central Basin and West Coast Basin Salt Nutrient Management Plan (SNMP) mixing model, which was reviewed by the Los Angeles Regional Water Quality Control Board (RWQCB). This work was in addition to modeling conducted for the SNMP and associated memos, which are hereby incorporated by reference.<sup>1</sup>

There are four worksheets (see Attachment 7.1) that present the results of the modeling:

1. AGB Calc – shows the flow-weighted average nitrate-N concentration from 2010 through 2025 for the AGB. The concentration of 10.0 mg/L nitrate-N is assumed for years 2026 through 2050.
2. Central Basin (CB) Pressure Area – shows simulated groundwater nitrate-N concentrations for the Central Basin Pressure Area through 2050 for pertinent scenarios. The Central Basin Pressure Area is the sub-basin that is affected by the AGB.
3. Central Basin – shows simulated groundwater nitrate-N concentrations for the Central Basin through 2050 for pertinent scenarios.
4. Charts – plots the tabulated values for the Central Basin Pressure Area and Central Basin through 2050.

Todd Groundwater ran three scenarios, each incorporating the flow-weighted average nitrate-N concentration for the AGB. These scenarios are designated with an “X” and include the individual seawater barrier scenario (4X), and the lower and upper ends of the combined scenarios (8X and 11X). Scenario 8X includes increased recycled water irrigation at the baseline average nitrate-N concentration used for the SNMP and the Groundwater Reliability Improvement Project (GRIP) Option A.<sup>2</sup> Scenario 11X includes increased recycled water irrigation at nitrate-N concentration of 10 mg/L and GRIP B.<sup>3</sup> Both of the combined scenarios include increased desalter pumping in the West Coast Basin (which does not have a significant effect on the Central Basin) and minor background changes in future water supply conditions and spreading at the Dominguez Gap Spreading Grounds.

Assimilative Capacity was calculated for CB Pressure Area and Central Basin worksheets using the following:

- Column E – seawater barriers (Scenario 4).<sup>4</sup>

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<sup>1</sup> See TM-1: Goals/Objective Implementation Measures, TM-2: Definitions and Key Concepts, TM-3: Conceptual Model, Draft SNMP Monitoring Plan (formerly TM-4), TM-5: Future Loading, Water Quality, Assimilative Capacity, and Anti-Degradation Analyses, TM-6: Implementation Measures available at: <http://www.wrd.saltnutrient.com/docs.html>.

<sup>2</sup> Increased use of recycled water, specifically a blend of advanced treated recycled water (10,000 acre-feet per year [AFY]) and tertiary-treated recycled water (11,000 AFY), for recharge at the Montebello Forebay Spreading Grounds (MFSG) to completely replace imported water beginning water year (WY) 2017-18.

<sup>3</sup> Increased use of tertiary-treated recycled water (21,000 AFY) for recharge at the MFSG to completely replace imported water beginning WY 2014-15.

<sup>4</sup> Per the SNMP, Scenario 4 is Increased recharge volumes and increased use of recycled water that has undergone advanced water treatment (AWT) to completely replace imported water at the West Coast Basin Barrier (WCBB), AGB, and Dominguez Gap Barrier (DGB). The AWT recycled water used for injection at the barriers is predicted to increase from a baseline period average of about 9,500 AFY to

- Column F – seawater barriers with injected water for AGB at 10 mg/L nitrate (Scenario 4X)
- Column G – difference between 4X and 4 (i.e., the net effect of the AGB at 10 mg/L nitrate)

Based on the projections through 2050, the assimilative capacity use of Scenario 4 is 3.9% for CB Pressure Area and 3.2% for the Central Basin. Based on the projections through 2050, the assimilative capacity use of Scenario 4X is 6.0% for the CB Pressure Area and 4.6% for the Central Basin.

Therefore, we can conclude that under both scenarios, the 10% AC threshold is not exceeded, and the net effect of injecting recycled water at a 10 mg/L nitrate-N concentration at the AGB is 2.0% of additional assimilative capacity use for the CB Pressure Area and 1.4% of additional assimilative capacity use for Central Basin.

With regard to Provision IV.3 and changes in nitrogen concentrations that trigger further action, the threshold established is unwarranted given predicted change in nitrogen over the 2050-planning horizon as shown below.

	Central Basin	Central Basin Pressure Area
Baseline nitrate-nitrogen, mg/L	1.1	2.6
Available assimilative capacity (AC) based on objective of 10 mg/L nitrate-N	8.9	7.4
2050 Model prediction of use of (AC) if recycled water is injected at 10 mg/L nitrate-N	1.4% 0.12 mg/L	2.0% 0.15 mg/L
10% Change Baseline Trigger Level over Prediction	0.012 mg/L	0.015 mg/L

A 10% change in the water quality sampled at any of groundwater monitoring wells over the predicted change would range from 0.012 mg/L to 0.015 mg/L, which are inconsequential differences and not worthy of further action.

**Recommended Revisions: see redline edits in tentative Order.**

**Recommended Revision to Recycled Water Discharge Specification III.4**

**(1) Delete or (2) change to a new finding as shown below.**

“The total nitrogen effluent limit of 10 mg/L is higher than the 5 mg/L recycled water specification in the previous Order. The effluent limit of 10 mg/L is consistent with CDPH recommendations as describe in their Findings of Fact and Conditions. ~~The increase in the CDPH recommended total nitrogen concentration from 5 mg/L to 10 mg/L is based on recent information about nitrite in drinking water wells.~~ The increase in the effluent limit is also supported by the minimal overall change in the nitrogen concentrations in the Central Basin due to recycling predicted by modeling conducted that evaluated the net effect of injecting recycled water at the Alamitos Barrier at a nitrate concentration of 10 mg/L-nitrogen. The net effect of injecting recycled water at a 10 mg/L nitrate-N concentration at the Alamitos Barrier is 2.0% of additional assimilative capacity use for the Central Basin Pressure Area (where the Project is located) and 1.4% of additional assimilative capacity use for the entire Central Basin through the period 2050. the SNMP model described in section VII.3 and under development. The local background”

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about 31,700 AFY by WY 2018-19. The switch to AWT recycled water from imported water significantly reduces TDS and chloride in the recharge water (changes in nitrate concentrations are not significant).

concentration of total nitrogen in the coastal pressure zone of the Central Basin averages 1.1 mg/L and the maximum groundwater concentration recorded in monitoring wells adjacent to the Barrier between 2007 and 2010 was 2.6 mg/L. ~~Injection of recycled water with total nitrogen concentrations greater than the background level may change local groundwater conditions. The monitoring program for the Project and as part of the SNMP will track groundwater quality and any changes not consistent with the modeling predictions.~~

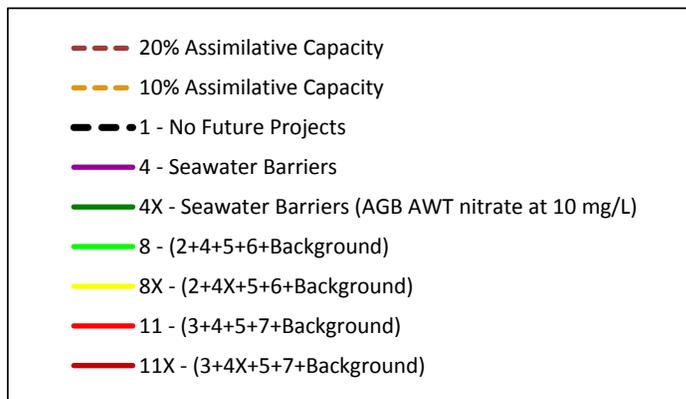
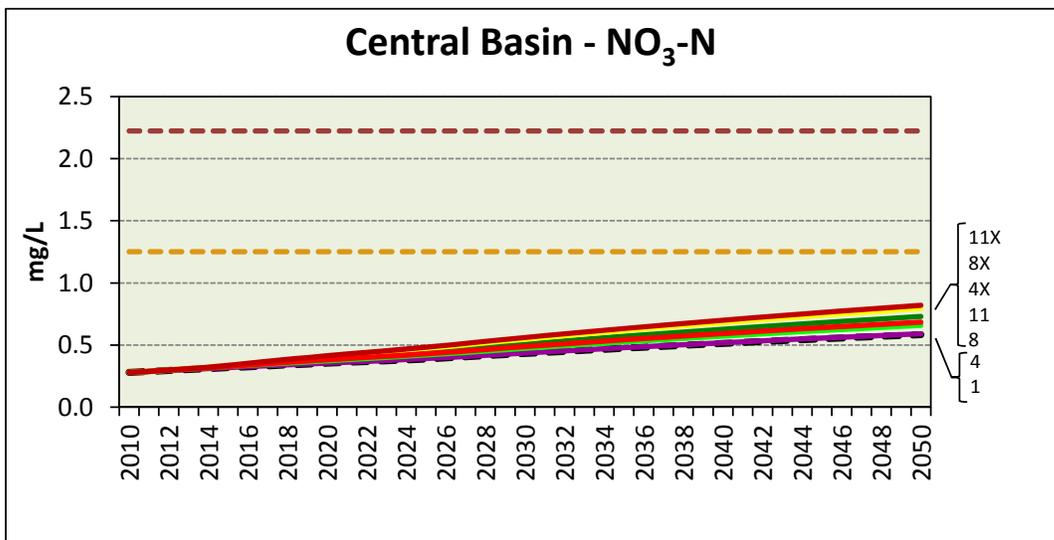
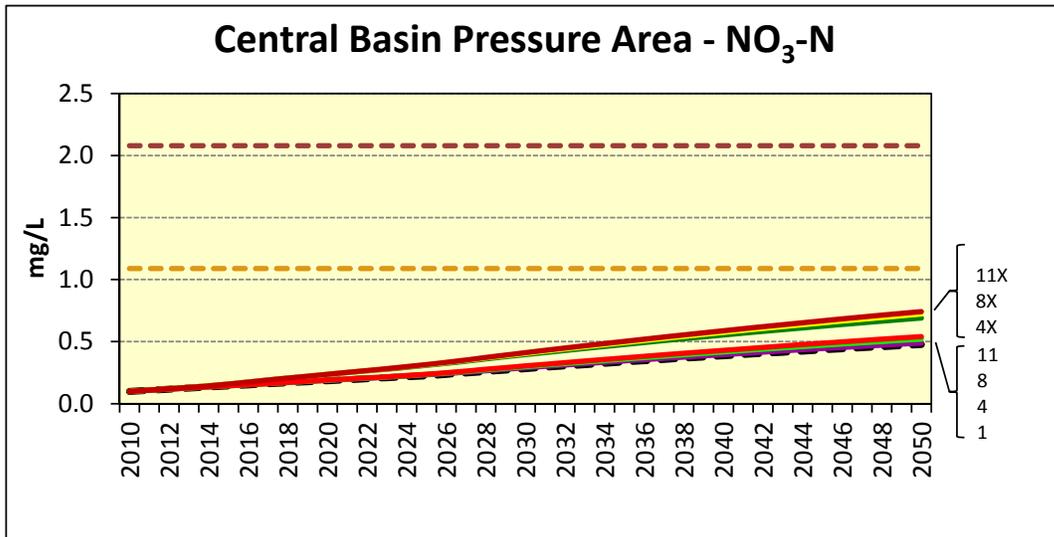
~~Even though the effluent limit has been changed to 10 mg/L to allow more operational flexibility, the Regional Board expects the quality of the groundwater to be optimized (with assistance of the predictive model and confirmatory monitoring) in order to manage any impacts per the SNMP and per antidegradation policy and principles. Additional monitoring, reporting and trend analysis for total nitrogen shall be applied to the monitoring data collected for the Alamitos Barrier Project and contrasted with the water quality changes predicted by model and documented in the first annual report. Should any groundwater monitoring well show an increase in the total nitrogen concentration of 10% over the value predicted by the Project Sponsors in the first annual report, additional studies shall be completed. These may include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the SNMP model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated.~~

# **ATTACHMENT 7.1**

	Percentage used for AGB water quality			Nitrate-N Concentration (mg/L)			AGB
	LJ Vander Lans	Jenson	Diemer	LJ Vander Lans	Jenson	Diemer	Flow-weighted Nitrate-N Concentration
2010-11	32.3%	48.7%	19.0%	10.00	0.61	0.42	3.60
2011-12	32.3%	48.7%	19.0%	10.00	0.61	0.42	3.60
2012-13	32.3%	48.7%	19.0%	10.00	0.61	0.42	3.60
2013-14	32.3%	48.7%	19.0%	10.00	0.61	0.42	3.60
2014-15	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2015-16	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2016-17	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2017-18	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2018-19	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2019-20	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2020-21	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2021-22	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2022-23	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2023-24	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00
2024-25	100.0%	0.0%	0.0%	10.00	0.61	0.42	10.00







- 1 - No Future Projects (baseline average)
- 2 - Increased recycled water for irrigation at baseline average Nitrate-N concentration
- 3 - Increased recycled water for irrigation at 10 mg/L Nitrate-N
- 4 - Increased Volume and AWT at Seawater Barriers (AWT at baseline average)
- 4x - Increased Volume and AWT at Seawater Barriers (AWT nitrate from AGB at 10 mg/L)
- 5 - Increased Desalter Pumping in West Coast Basin
- 6 - GRIP A (10,000 AFY AWT / 11,000 AFY Tertiary replacement of imported water)
- 7 - GRIP B (100% Tertiary replacement of imported water)

Background changes include decreased imported water use for supply in the Central Basin and slightly increased imported water for supply in the West Coast Basin and increased stormwater capture at the DSGG and other facilities are included in all combined scenarios

# **ATTACHMENT 8**

**Attachment 8**  
**Information Regarding NDMA**  
**Finding 41**

“Finding 41. CDPH established a notification level of 10 nanogram per liter (ng/L) for NDMA in drinking water sources at which concentration a responsible water agency is required to notify the public. CDPH established a reporting level of 300 ng/L for NDMA, at which concentration a responsible water agency is required to stop drinking water delivery. At this time, CDPH has not established a Maximum Contaminant Level (MCL) for NDMA. NDMA is identified by the Regional Water Board as a constituent of concern because it is created by the disinfection process and has a known cancer risk. Further, NDMA has been identified by the State Water Board in the Recycled Water Policy as a chemical of emerging concern which should be sampled in recycled water used for groundwater replenishment through injection because of the human health risks.”

**Comments:**

The description of Notification Levels and Response Levels (Reporting Level is not the correct term) is inaccurate.

- Per Health and Safety Code section 116455 (c)(3), “**Notification level**” means the concentration level of a contaminant in drinking water delivered for human consumption that CDPH has determined, based on available scientific information, **does not pose a significant health risk** but warrants notification pursuant to this section. NLs are non-regulatory, health-based advisory levels established by CDPH for contaminants in drinking water for which MCLs have not been established. 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 MCL regulatory standard setting process and are not drinking water standards.
- Per Health and Safety Code Section 116455 (c)(4), “**Response level**” means the concentration of a contaminant in drinking water delivered for human consumption at which CDPH **recommends (not requires)** that additional steps, beyond notification pursuant to this section, be taken to reduce public exposure to the contaminant (**CDPH does not require water systems to be taken out of service**). Response levels are established in conjunction with NLs for contaminants that may be considered candidates for establishment of MCLs, but have not yet undergone or completed the MCL regulatory standard setting process and are not drinking water standards.

Toxicity information does not demonstrate that NDMA is a “known” human carcinogen. In establishing the Public Health Goal for NDMA, the Office of Environmental Health Hazard Assessment used the occurrence of bile duct tumor incidence in rats to estimate the dose associated with a 10% incidence of tumors. This information was extrapolated and corrected to a 10<sup>-6</sup> cancer risk level and corrected to human dose equivalents based on the ratio of human and rat body weight to the <sup>3</sup>/<sub>4</sub> power.

Per the U.S. EPA Integrated Risk Information System, NDMA is classified as B2, a probable human carcinogen, based on induction of tumors in rodents and non-rodent mammals by various routes (<http://www.epa.gov/iris/subst/0045.htm>). Under the 1986 EPA Guidelines, EPA used the following classifications:

- A (Human carcinogen)
- B1 (Probable human carcinogen - based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals)
- B2 (Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals)
- C (Possible human carcinogen)

- D (Not classifiable as to human carcinogenicity)
- E (Evidence of non-carcinogenicity for humans)

With regard to the Recycled Water Policy Monitoring Requirements, CEC indicators are placed in two categories:

- Those CECs of toxicological relevance to human health, which are referred to as “health-based CECs” as determined through a screen process used by the State Water Board’s expert panel. The health-based monitoring trigger thresholds (MTLs) used by the expert panel were deemed to be conservative and only used for the purpose of prioritizing CECs for monitoring. The panel emphasized that if a measured concentration of a CEC exceeded its respective MTL, it did not necessarily indicate the existence of public health risks. See Anderson, P., Denslow, N., Drewes, J. E., Olivieri, A., Schlenk, D., Snyder, S. (2010) *Monitoring Strategies for Chemicals of Emerging Concern (CECs) in Recycled Water: Final Report*, Sacramento, CA, hereby incorporated by reference: <http://www.sccwrp.org/ResearchAreas/Contaminants/ContaminantsOfEmergingConcern/RecycledWaterAdvisoryPanel.aspx>.
- CECs determined not to have human health relevance, but useful for monitoring treatment process effectiveness, which are referred to as “performance indicator CECs.”

Health-based CECs, such as NDMA, may also serve as a performance indicator CEC.

**Recommended Revisions to Finding 41: see redline edits in revised tentative order.**

# **ATTACHMENT 9**

**Attachment 9**  
**Talking Point #6 (Inconsistent with CDPH Conditions and Draft Groundwater Replenishment Regulations) – Pathogen Control**  
**Provisions II.5, III.1, VII.5**

“II.5 The advanced treated process must result in adequate disinfection. The in-stream monitoring of that process shall not indicate UV power level or Hydrogen Peroxide in amounts less than the following:”

<b>Table 6 – Vander Lans WTF Recycled Water Minimum Treatment Requirements</b>		
<b>Constituent</b>	<b>Unit</b>	<b>Minimum</b>
UV power level	%	TBD
Hydrogen Peroxide	ml/min	TBD
Hydrogen Peroxide	mg/L	TBD

“III. 1 Table 7” – only shown for pathogens

<b>Table 7 –Effluent Limitations</b>				
<b>Constituents</b>	<b>Units</b>	<b>Daily Max</b>	<b>Rolling Annual Average</b>	<b>Other</b>
Enteric virus	Log			TBD
Giardia	Log			TBD
Cryptosporidium	Log			TBD

“VII.5 This Order may be reopened upon a determination by CDPH that treatment and disinfection of the Vander Lans WTF recycled water is not sufficient to protect human health, or upon completion of startup testing to incorporate operational or water quality limits as necessary, to ensure the inactivation of viruses in the recycled water.”

**Comments:** As presented by CDPH at the December 2011 stakeholder meetings on the draft Groundwater Replenishment Regulations (see Attachment 9.1), the Pathogenic Microorganism Control provisions in Section 60320.208 were intended to ensure that pathogens would not exceed the tolerable risk dose in drinking water. The approach was to set a log reduction requirement from raw sewage to useable groundwater for the following log reductions:

- 12-log virus
- 10-log *Giardia*
- 10-log *Cryptosporidium*

The starting point for virus and *Giardia*, was the highest concentrations from Table 3-9 from Metcalf & Eddy, 2007.<sup>1</sup> For *Cryptosporidium*, CDPH used the highest (rounded) concentrations from studies they had obtained from Australia and Norway. The endpoint selected was the U.S. EPA allowable drinking water density (modified for *Cryptosporidium* infectious dose and exposure) to achieve a one in 10,000 (10<sup>-4</sup>) annual risk of infection goal.

CDPH elected to require three barriers for reliability to achieve the log reductions. Each barrier must achieve at least 1.0-log reduction and cannot be credited with more than 6-log reduction; for virus only, a Project Sponsor can receive 1-log reduction per month based on a validated tracer study (in the case of the Alamitos Barrier this has been done using an intrinsic tracer); the log reductions must be verified using a procedure approved by CDPH for the different barriers.

Per CDPH Condition #13, these are the barriers identified and approved for the Project.

<sup>1</sup> Metcalf & Eddy, 2007, *Water reuse issues, technologies, and applications*. New York, NY: McGraw Hill.

**Pathogen Log Removal/Inactivation Requirements**

Pathogen	2013 Draft GWR Regulations Min	Proposed Pathogen LVLWTF Treatment Credits					Total Credits
		WRP <sup>a</sup>	MF	RO	UV/AOP	Travel time	
Giardia	10	2 <sup>b</sup>	2.7 <sup>c</sup>	1.5 <sup>c</sup>	6 <sup>d</sup>	0	12.2
Cryptosporidium	10	1 <sup>b</sup>	2.7 <sup>c</sup>	1.5 <sup>c</sup>	6 <sup>d</sup>	0	11.2
Viruses	12	2 <sup>b</sup>	N/A	1.5 <sup>c</sup>	6 <sup>d</sup>	6 <sup>e</sup>	15.5

Notes:

- a. WRP refers to the LBWRP and LCWRP.
- b. To be conservative, WRD has only claimed pathogen removal credits associated treatment processes from influent through secondary treatment using the data shown in Table 5-3.a through Table 5-3.c in the final amended Title 22 Engineering Report.
- c. Per discussions with the Department, based on membrane integrity and concomitant minimum reductions. Pathogen reduction credit for MF includes potential impact of backwash water recycle.
- d. To be further confirmed by completing a limited scope phage study for the existing UV train.
- e. The closest production well is greater than 6 months travel time.

Validation/monitoring of treatment barrier performance is function of specific unit process parameters. For the Project, these were accepted by CDPH in Section 13.8 of the 2013 approved Engineering Report (see below) and to be included in the approved Project Operations Plan per CDPH Conditions #6 and #7.

**“13.8 Evaluation of Pathogenic Microorganism Removal**

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

- A. LBWRP (and LCWRP, if the effluent is used as a source water): For the purpose of demonstrating that the log reductions assumed in Section 5 are achieved at the WRP(s), WRD will report the daily average and maximum turbidity, percent of time more than 5 NTU, and daily coliform results associated with the WRP(s);
- B. MF (LVLWTF): For each day of operation, MIT will be performed, and the daily “Pass” or “Fail” results will be reported;
- C. RO (LVLWTF): Conductivity and TOC will be continuously measured upstream and downstream of the RO using online analyzers, and for each day of operation, the following will be reported for both conductivity and TOC - daily minimum, maximum, average, and percent reduction based on daily average values;
- D. AOP (UV and hydrogen peroxide at LVLWTF): For each day of operation, WRD will report the calculated daily peroxide dose (based on the peroxide pump speed and bulk feed concentration), percent reduction based on daily average of chloramine (via total residual chlorine) measured upstream and downstream of AOP, and the applied UV power will be reported. For UV, WRD will report the UV system dose (expressed as greater than a certain threshold such as 300 milli-joules/cm<sup>2</sup>), UV transmittance (daily minimum, maximum, and average), and UV intensity for each reactor (daily minimum, maximum, and average); and

- E. Based on the calculation of log reduction achieved each day by the entire treatment system, WRD will report “Yes” or “No” for each day as to whether the necessary log reductions (i.e. 10-logs for Giardia, 10-logs for Cryptosporidium, and 12-logs for virus) have been attained. An overall log reduction calculation will be provided only for those days when a portion of the treatment system does not achieve the credits proposed in Table 5-1.” See pages 13-26 through 13-27”

As discussed with CDPH and Regional Water Board staff on several instances after the release of the January 2014 tentative order, the pathogen control requirements were never intended to serve as or be converted to end-of-pipe limits given the unit process and retention time components of the multi-barrier approach. WRD is required to ensure that the barriers are working as intended based on the monitoring described above and to take action if a critical barrier fails and cannot achieve the intended log reductions, with failure as described per CDPH Condition #7.

For these reasons, the pathogen control requirements included in the Order by the Regional Water Board are incorrect, not in conformance with CDPH Conditions, and must be deleted.

**Recommended Revisions: see redline edits in tentative order.**

# **ATTACHMENT 9.1**

**CALIFORNIA'S DRAFT  
CRITERIA FOR  
GROUNDWATER  
RECHARGE WITH  
RECYCLED WATER  
Stakeholder Meetings  
December 2011**

**Drinking Water Program  
California Dept. of Public Health**

# Approach - General

- Present the overarching goals and principles behind the draft regulation
- Present the intent, approach, and supporting science for the individual sections
- Answer questions about intent and general approach

# Presentation Outline

- Overview of Principals - Bob Hultquist
- General Requirements - Bob Hultquist
- Public Hearing, Lab Analysis & Source Control - Brian Bernados
- Pathogen Microorganisms - Bob Hultquist
- Nitrogen and Regulated - Brian Bernados
- Unregulated Chemical Control Overview, TOC, RWC & Diluent Water - Bob Hultquist

Short Break

# Presentation Outline, cont.

- Unregulated Chemical Control Indicators, Surrogates and FAT - **Brian Bernados**
- Additional Constituents, Optimization and Operations Plan - **Brian Bernados**
- Response Time - **Bob Hultquist**
- Monitoring Well, Reporting - **Bob Hultquist**
- Alternatives, Engineering Report and Summary - **Bob Hultquist**

# Principles

- Replenish groundwater (GW) basins used as drinking water sources
- Low tolerable risk
  - One in 10,000 ( $10^{-4}$ ) annual risk of infection from Pathogenic Microorganisms
  - Drinking water standards
  - Unregulated chemical control
- No degradation of an existing water source
- Multiple barriers

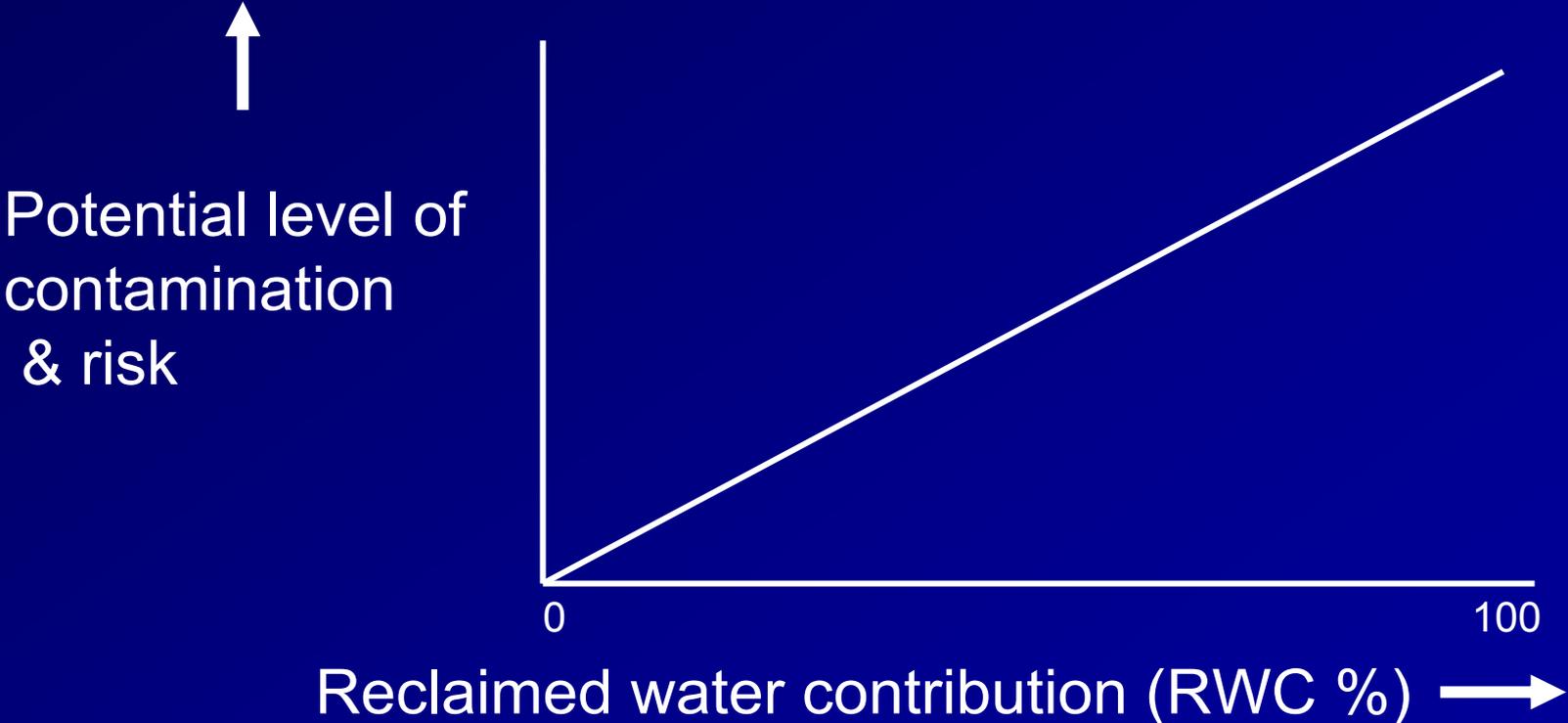
# Groundwater Protection Challenges

- If there is contamination, it could persist
- Plumes may be difficult to track
- In a large aquifer, there may be numerous dispersed wells and it may not be feasible to provide treatment to each
- There may be individual residence wells or business wells

# Indirect Potable Reuse

- Make a source of drinking water
  - not drinking water
  - not direct potable reuse
- Storage in an aquifer
- Some natural treatment
- Time to identify and respond to a treatment failure

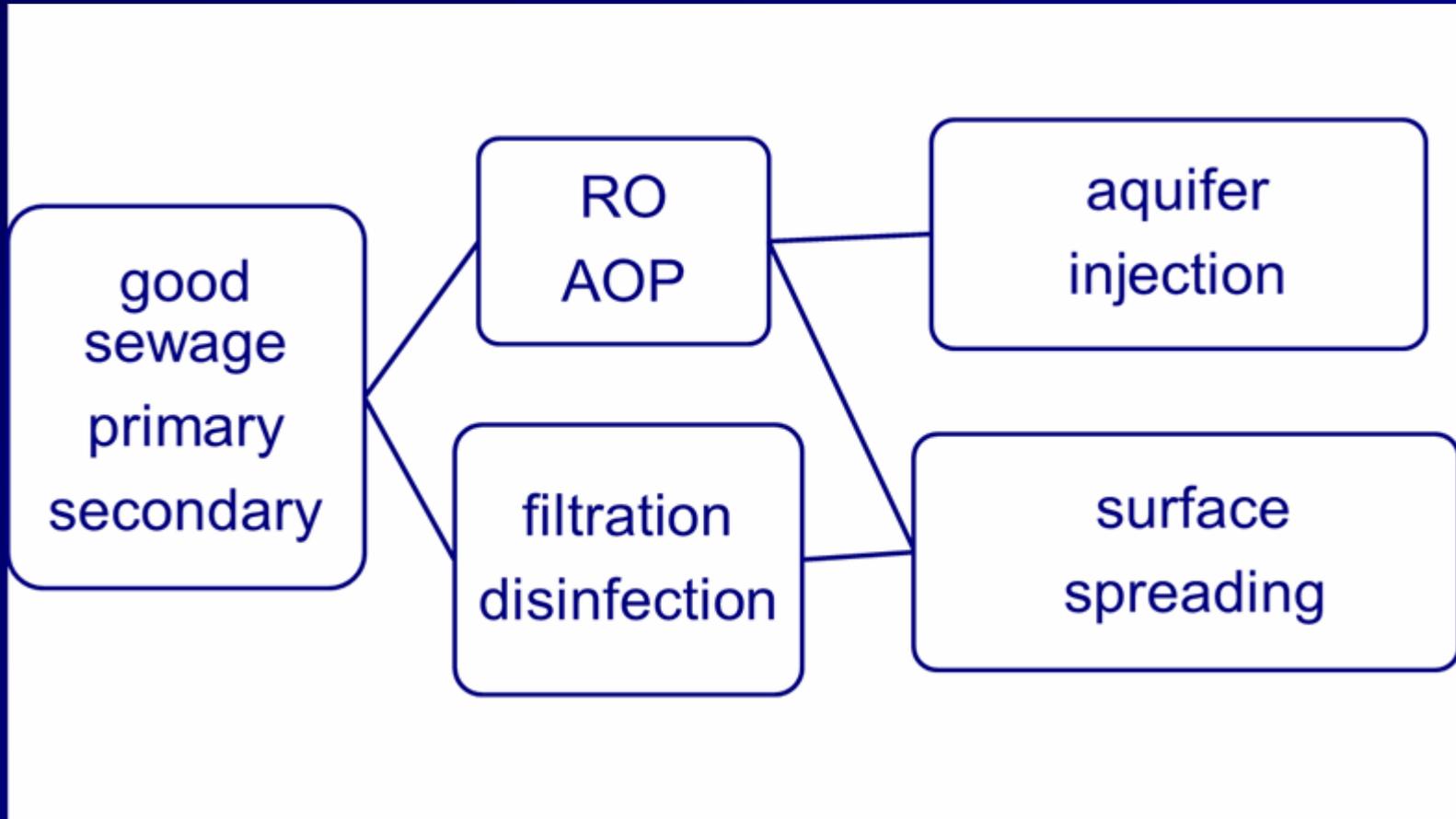
# Degrees of Indirect Potable Reuse



# Project Types

- Organize criteria by method of recharge to simplify identifying relevant requirements
- Surface spreading w/o full advanced treatment (FAT) – Article 5.1
  - Scheme relies on soil aquifer treatment (SAT)
- Subsurface application – Article 5.2 (FAT required)
  - FAT is continuous advanced treatment of the entire flow
- Surface spreading with FAT – Article 5.3

# Schemes



# Groundwater Replenishment Reuse Project (GRRP) 60301.390

- A GRRP is a project using recycled municipal wastewater
  - for the purpose of replenishment of groundwater that is designated a source of water supply in a Water Quality Control Plan, or
  - which has been identified as a GRRP by the RWQCB

# General Requirements

## 60320.100 & 200

- a. The type of project that must comply with the Article
- b. Plan for alternative source of potable water or remedial treatment in case GRRP causes an unsafe source
- c. Benchmark sampling
- d. Hold recycled water underground long enough to meet requirements of pathogen barrier (if needed) and response time requirements

# General Requirements - 2

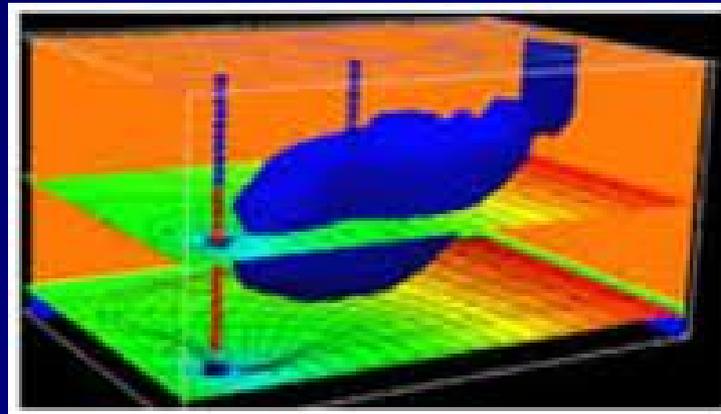
- e. Map showing
  - The GRRP facilities
  - Monitoring and drinking water wells
  - The boundary within which certain requirements are not met (more later)
- f. New GRRPs demonstrate managerial and technical capacity to meet requirements
- g. Commissioning tests
- h. Hydrogeological assessment

# Boundary for Groundwater recharge

- The boundary is the downgradient limit of the zone around the recharge site necessary to meet all requirements
  - The time required to provide the pathogen barrier (if needed)
  - The time to react to a treatment failure
  - The time to achieve effective soil-aquifer treatment
  - RWC compliance, if necessary

# Boundary - 2

- The boundary may be complex in three-dimensions due to different water velocities in different aquifers



- Within the boundary, water may not be withdrawn as an unimpaired drinking water source

# Public Hearing 60320.102 & 202

- Intent - to foster informed comment by the public
- Hearing held by the project sponsor prior to:
  - New project
  - A higher recycled water contribution
- Present information on the project
  - Made public before hearing
  - Must be provided via the Internet
  - Approved by the Department
- At least 30 days prior to the hearing, Post on the Internet and Notify public & down-gradient well-owners of the hearing

# Lab Analyses 60320.104 & 204

- Department approved labs for constituents that have maximum contaminant levels (MCLs)
- That means labs accredited by the CDPH Environmental Lab Accreditation Program (ELAP)
- CDPH approved drinking water methods for MCLs assure low detection levels
- Analyses for chemicals without MCLs shall be described in the Operations Plan

# Source water control 60320.106 & 206

- A pollutant source control program beyond typical industrial pretreatment that includes
  - an assessment of the fate of Department-specified contaminants,
  - contaminant source investigations and contaminant monitoring
  - an outreach program to industrial, commercial, and residential for the purpose of managing and minimizing the discharge of contaminants
    - [nodrugsdownthedrain.org](http://nodrugsdownthedrain.org)
  - an up-to-date inventory of contaminants discharged into the wastewater collection system so that new contaminants of concern can be readily evaluated

# Pathogenic Microorganism Control 60320.108 & 208

- Intent – ensure that pathogens will not exceed the tolerable risk dose in drinking water
- Approach - set a log reduction requirement from raw sewage to useable groundwater
  - 12-log Virus
  - 10-log *Giardia* cysts
  - 10-log *Cryptosporidium* oocysts

# Pathogenic Microorganisms - 2

- Start from:
  - For virus and *Giardia* - Water Reuse (Asano et al, 2007) Table 3-9, high end of range
  - For *Cryptosporidium* use high (and rounded up) levels from studies in Melbourne and Norway
- End point is USEPA allowable drinking water density (modified for *Cryptosporidium* infectious dose and exposure)
  - One in 10,000 ( $10^{-4}$ ) annual risk of infection goal

# Multi-barrier Pathogen Control

- 3 separate barriers for reliability
- A project may select a set of treatment and retention time barriers to meet the log reduction value (LRV) required
- Title-22 Filtration/disinfection required only for surface spreading projects w/o FAT
- $1\text{-log} \leq \text{individual barrier LRV} \leq 6\text{-log}$ 
  - Significant barriers
  - Barriers that can be validated

# Barrier Validation

- Must validate each of the treatment processes used to meet log reduction, except for retention time underground
  - Demonstration report,
  - Or a challenge test
  - Either must provide evidence of the treatment process's log reduction.
- Operations Plan must specify on-going monitoring to verify performance of each treatment process's ability to achieve its credited log reduction

# Barriers - 2

## ■ Retention time barrier

- 1-log virus reduction for each month of subsurface retention
  - Yates et al 1985
- Verify with added or approved intrinsic tracer study
  - retention time is the time for first two percent (2%) to arrive
- Limit on credit prior to added tracer study (see table)
- For spreading projects,
  - full Log reduction requirement for *Cryptosporidium* and *Giardia* is met when 6-month retention is met

# Methods to Determine LRV

Planning and Engineering Report Effort vs. LRV			
Method	General Accuracy	General Level of Effort	Log Virus per month
Formula (Darcy's)	Poor	limited info on aquifer	0.25
3-D model	Fair	A lot of info on aquifer	0.50
Intrinsic Tracer	Better	quantify existing indicators	0.67
Added Tracer	Best Available	track added Tracer ( $T_2$ )	1.0

# Pathogenic Microorganisms - 3

- Failure to meet an LRV - consequences
  - Investigate, correct problem, and notify for a failure to meet the total log reduction
  - Shut down if the virus LRV is less than 9-log or the Giardia or Cryptosporidium LRVs are less than 8-log

# Nitrogen Compound Control

## 60320.110 & 210

- Goal is to preclude exceeding the nitrite or nitrate MCL
- Collect 2 samples each week, at least 3 days apart
- Comply in effluent or in recharge water
- Limit = 10 mg/L as N - average of 2 consecutive samples
  - If > 10 mg/L total N, consequences include:
    - Notify CDPH & RWQCB
    - Monitor, investigate and take actions
- If average of 4 consecutive samples > 10 mg/L total N, suspend application
- Provisions allow for reduced monitoring in future

# Regulated Chemicals 60320.112 & 212

- A chemical or physical drinking water standard must be met:
  - In the plant effluent
  - Or recharge water (accounting for dilution)
- Quarterly testing for chemicals with primary MCL
- Annual testing for chemicals with secondary MCL
- Consequences for exceeding standard:
  - 4 conditions specified
  - Including resampling to confirm
  - Responses to exceedance

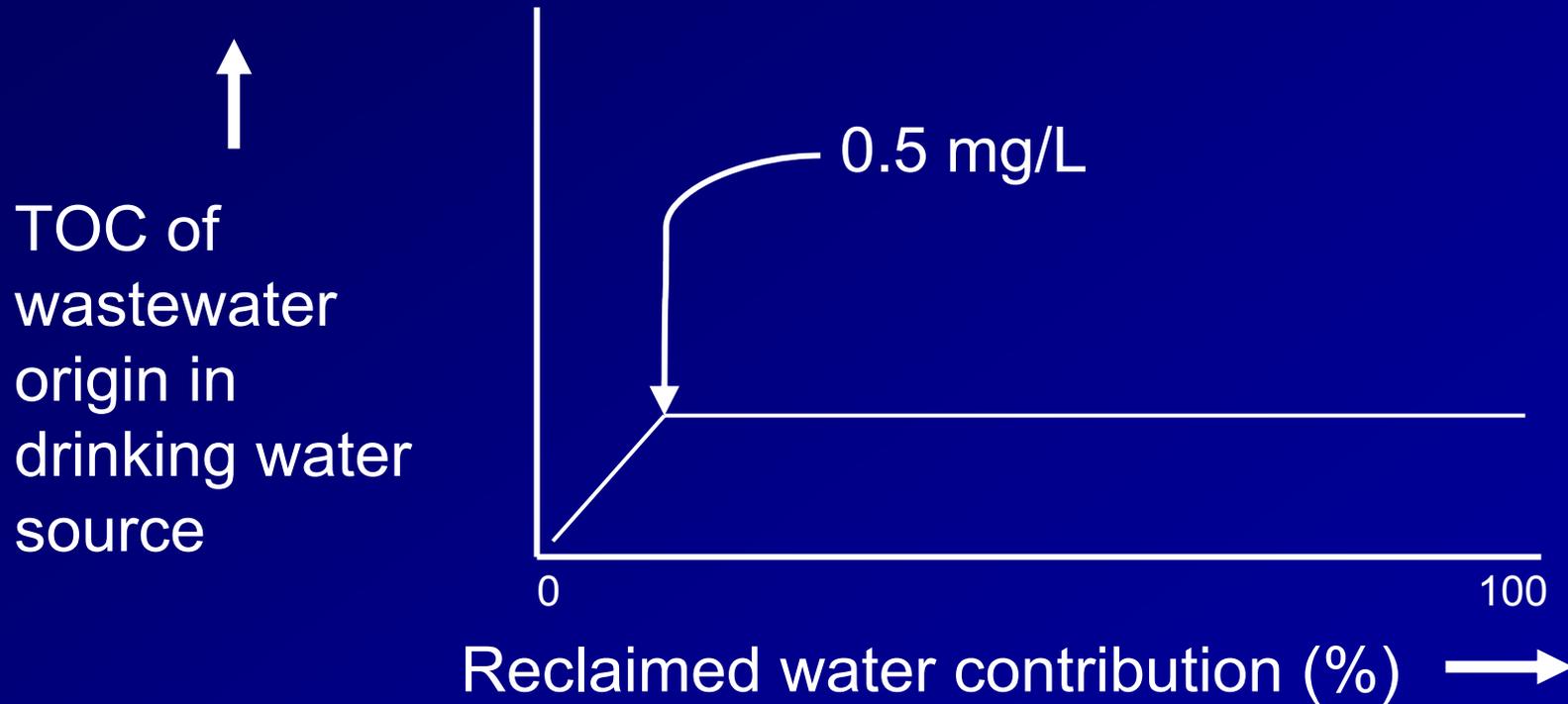
# Unregulated Chemical Control Overview

- 60320.114 , 116, 118 and 201, 214, 216 & 218
- The Diluent Water, Recycled Water Contribution (RWC), Total Organic Carbon (TOC) and Soil Treatment Process (SAT) Requirements, and Advanced Treatment Criteria sections work in concert to limit the concentration of any potentially harmful unregulated or unknown chemical.
- TOC used as a surrogate for the unknown organic chemicals

# Unregulated Chemical Control - 2

- A limit of 0.5 mg/L for TOC from recycled water in the groundwater ensures effective treatment and/or dilution is used
  - Ensure use of best RO membranes with excellent organic chemical removal
  - Gets soil treatment projects to a recycled water TOC comparable to projects found to be safe

# TOC equation intent



# Unregulated Chemical Control - 3

For spreading projects,

- Reclaimed water compliance calculation:

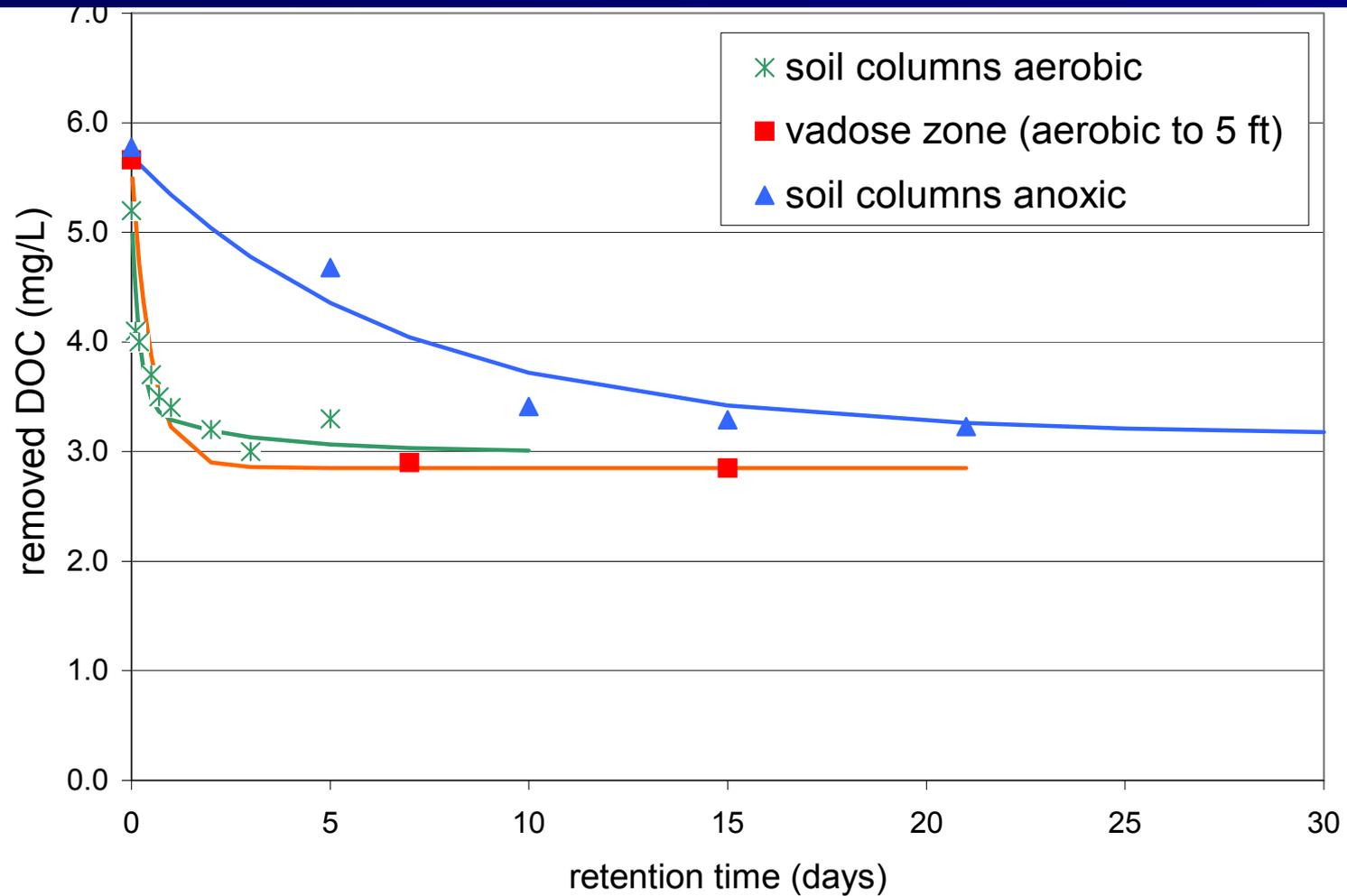
$$\text{TOC} \leq (0.5 \text{ mg/L}) / (\text{RWC})$$

allows a GRRP to balance treatment and dilution as needed to comply

- SAT alone cannot meet the 0.5 mg/L TOC level (due to the non-biodegradable TOC fraction) and must be supplemented with dilution
- Can treat a portion of the flow to reduce TOC and increase the RWC

FAT projects must meet 0.5 mg/L in the RW

# Soil Treatment (Peter Fox)



# Recycled Water Contribution 60320.116 and 216

(reclaimed water flow)

(reclaimed water + diluent water flow)

- RWC must be met each month using the previous 120 months of data
  - Chronic exposure threat
  - Extended drought
- RWC calculations begin after 30 months
- Meet RWC everywhere beyond the boundary

# Recycled Water Contribution - 2

- The initial maximum RWC for a GRRP is set by CDPH based on information provided in the engineering report and as a result of the public hearing
- Initially, shall not exceed 0.20 for projects w/o FAT
- FAT project initial RWC as justified
- May increase the RWC above the initial value if:
  - Increase approved by CDPH and RWQCB
  - For previous 52 weeks, the 20-week running average TOC  $\leq (0.5 \text{ mg/L}) / (\text{RWC proposed})$
  - Receive permit from RWQCB

# Recycled Water Contribution - 3

## Spreading projects only

■ Prior to operating a GRRP at an RWC greater than 0.50 or 0.75, project sponsor must:

- Provide proposal to CDPH prepared & signed by PE with 3 years experience in RW & potable
- For previous 52 weeks, the 20-week running average TOC  $\leq (0.5 \text{ mg/L})/(\text{RWC proposed})$
- Submit updated engineering report and Operations Plan
- Show that monitoring wells are located properly and receiving recharge water

# Diluent Water 60320.114 & 214

- Diluent water quality must meet primary MCLs and NLs
  - Use approved potable water source
  - Or GW or stormwater if a source water evaluation is done
- Quantity to be used in the RWC calculation must be identified such that:
  - The diluent and recycled water must be in the correct proportions (RWC) over the compliance averaging period

# TOC and Soil Treatment

## 60320.118 & 218

- $\text{TOC} \leq (0.5 \text{ mg/l}) / (\text{RWC})$ 
  - For spreading projects
    - In the recycled water, or
    - After soil treatment but not influenced by dilution (otherwise would benefit from dilution twice)
    - Mound or lysimeter
    - 3 options to avoid dilution confounding the result
  - In the recycled water for FAT projects
  - Not to exceed on 20 week running average or the average of the last 4 weekly TOC results

**BREAK**

# Framework Using Indicators and Surrogates

- Goal is to develop a monitoring program of specific chemicals indicators and surrogates
- “Monitoring Strategies for CECs in Recycled Water Recommendations of a Science Advisory Panel Convened by the SWRCB”
- Work by Shane Snyder & Jorg Drewes
- WateReuse 03-014, Drewes, Sedlak, Snyder, Dickenson - “Development of Indicators and Surrogates for Chemical Contaminant Removal during Wastewater Treatment and Reclamation”
- Environmental Sci. Technol. 2009, 43, 6242–6247

# Monitoring Strategies for CECs in Recycled Water Recommendations of a Science Advisory Panel Convened by the SWRCB

- “changes in bulk parameters do correlate with changes of indicator chemicals”
- “Thus, to ensure proper performance of unit operations regarding the removal of CECs, a combination of appropriate surrogate parameters and performance indicator CECs should be selected that are tailored to monitor the removal efficiency of individual unit processes”
- Defines surrogate/indicator framework

# “The selection of a practical set of indicator compounds is driven by . . .

- “. . . treatment performance and less so by toxicological relevance.
- Thus, selecting multiple indicators representing a broad range of properties will allow accounting for compounds currently not identified (“unknowns”) and new compounds . . .
- The underlying concept is that absence or removal of an indicator compound during a treatment process would also ensure absence or removal of unidentified compounds with similar properties.”
- 2 phases: piloting/start-up and full-scale
- Suggests a 5-step process

# Soil Treatment 60320.118 f

- Indicators of the effectiveness of SAT must be identified and measured
- Pick at least 3 relevant indicators based upon an occurrence study approved by CDPH
- Monitor quarterly
  - prior to SAT and
  - no more than 30 days downgradient
- If a 90% reduction (excluding the effect of dilution) is not demonstrated
  - investigate
  - and report

# **SAT** - Indicator Compound Examples for Soil Treatment Process (from WRF 03-014)

SAT removes > 90% of these:

Acetaminophen

Atenolol

Atorvastatin (Lipitor)

Bisphenol A

Caffeine

DEET

Diclofenac

Erythromycin-H<sub>2</sub>O

17β-Estradiol (E2)

Estriol (E3)

Estrone (E1)

Fluoxetine (Prozac)

Gemfibrozil

Hydrocodone (Vicodin)

Ibuprofen

Iopromide

Ketoprofen

Metoprolol (Lopressor)

Naproxen

Nonylphenol

Propranolol

# Indicator Compounds For Verifying Location of Monitoring Wells

(from WRF 03-014)

SAT removes < 25% of  
these:

Carbamazepine

Dilantin

Primidone

TCEP

TDCPP

TCIPP

SAT removes more  
than 25% but < 50% of

Chloroform

SAT removes more  
than 50% but < 90% of

Meprobamate

# Advanced Treatment Criteria

- Goal is to remove the organic chemicals that may pose a health threat
- Continuous treatment of the entire flow with Reverse Osmosis (RO) and Advanced Oxidation Process (AOP)
- RO permeate is free of almost all organics
- AOP used to degrade any that pass through RO (NDMA & 1,4-dioxane) including unknown chemicals and
- AOP provides multi barrier treatment
  - 1998 report by NRC - potable reuse should include multiple, independent barriers to organic chemical contaminants

# Advanced Treatment 2008 vs. 2011

- **2008** advanced oxidation treatment to provide **treatment equivalent to**
  - a **1.2 log** NDMA reduction and
  - a **0.5 log** 1,4-dioxane reduction
  - Received comments regarding Ozone / H<sub>2</sub>O<sub>2</sub>
- **2011** advanced oxidation to **provide**
  - NDMA reduction **to NL** and
  - 1,4-dioxane reduction **to NL**
  - **2 options to design AOP**
  - Ozone may be more attractive in some cases



## Section 60320.201 a

- “A GRRP shall use a reverse osmosis membrane that:”
- (1) “utilizing ASTM method D4194-03 (2008), achieves an average rejection of NaCl  $>$  or  $=$  99.5 % with a 15% recovery”
- “(2) through bench-scale testing conducted pursuant to section 60320.200(g), initially produces a permeate having TOC concentrations of 0.25 mg/L or less.”

# Section 60320.201 b

## Potential RO Surrogates

- “on-going performance monitoring (e.g. conductivity or TOC) that indicates when the integrity of the process has been compromised. “
- Online continuous
  - Conductivity
  - Low-level TOC
  - UV absorbance
  - Sulfate
  - Nitrate
  - Ammonia
  - Sucralose?

# RO Effectiveness

- RO is effective at removing large and/or ionic compounds via:
  - Size exclusion
  - Electrostatic repulsion
  - Adsorption phenomena
- Most CECs are large organic molecules with a  $MW > 250$  and are well removed; however,
- RO is less effective at removal of small non-ionic, neutral compounds
  - NDMA
  - chloroform
  - 1,4-dioxane



# Indicators Detected After RO (a Few Times @ Very Low Levels:)

4-nonylphenol

Bisphenol-A

Carbamazepine

DEET

Estradiol

Gemfibrozil

Ketoprofen

Musk ketone

Primidone

Triclocarban

other fire retardants TDCPP & TCIPP

Acetaminophen

Caffeine

Clofibric acid

Diclofenac

Galaxolide

Ibuprofen

Meprobamate

Oxybenzone

Sulfamethoxazole

TCEP

# Advanced Oxidation Process (AOP)



- AOP can reduce organics that pass RO
- Especially 2 contaminants with NLs
  - NDMA reduction
    - NDMA has a small MW of 74
    - Concentration varies, but always detected
    - Passes through RO and requires AOP
  - 1,4-dioxane reduction
    - 1,4-dioxane has MW of 88
    - Passes through RO and requires AOP

# UV AOP & 1,4-dioxane

- While NDMA is generally photoliable, 1,4-dioxane is not, so UV can not photolyze 1,4-dioxane well
- The addition of  $\text{H}_2\text{O}_2$ , creates hydroxyl radicals to meet the 0.5-log reduction of 1,4 dioxane, which is photostable.
- BUT what is the optimum dose?
- It is currently difficult to quantify hydroxyl radicals, as they are very reactive and short-lived.
- Recent research has shown chloramine residual may be a surrogate

## 2 Options for AOP 60320.201 c & d

- Similar to the previous approach
  - Design using 0.5-log reduction of 1,4-dioxane to determine the equipment size and dose for AOP
- OR new approach based on SWRCB SAP
  - Utilize an oxidation process that achieves optimal removal of many indicator compounds.
  - Establish at least one surrogate or operational parameter that reflects the removal of at least five of the nine indicator compounds selected . . .
  - Uses chemical structures and functional groups of indicator compounds

# First Option for AOP 60320.201 c

- Based upon latest research, such as
- Environ. Sci. Technol. 2009, 43, 6242–6247
- *Applying Surrogates and Indicators to Assess Removal Efficiency of Trace Organic Chemicals during Chemical Oxidation of Wastewaters*
- By Dickenson, Drewes, Sedlak, Wert & Snyder
- “Potential surrogate parameters and indicator compounds, identified by reviewing previous publications and classified by their structural properties, were tested in pilot- and full-scale treatment systems.”

# AOP Removal > 90% of Most Indicator Compounds

## Removal Categories / Structure

### (A) Hydroxy Aromatic

Acetaminophen, Bisphenol A, Estrone, Triclosan

### (B) Amino/Acyl amino Aromatic

Atorvastatin, Sulfamethoxazole

### (C) Nonaromatic C=C

Carbamazepine, Codeine, OTNE

### (D) Deprotonated Amine

Atenolol, Caffeine, Diclofenac, Trimethoprim

### (E) Alkoxy Polyaromatic – Naproxen, Propranolol

### (F) Alkoxy Aromatic – Gemfibrozil, Hydrocodone

### (G) Alkyl Aromatic

DEET, Dilantin, Ibuprofen, Primidone

# AOP <90% Removal of Some Indicator Compounds

## Removal Categories / Structure

Typical Expected Intermediate Removal 50-90%  
using ozone

(H) Saturated Aliphatic

Iopromide

Meprobamate

(I) Nitro Aromatic

Musk ketone

Musk xylene

For UV / H<sub>2</sub>O<sub>2</sub>

Removal of Meprobamate is 20-50%

# AOP Optimal Removal

- 0.5-log (69%) for each indicator in the functional groups in (1)(A) through (1)(G) – [good removal], and
- 0.3-log (50%) for each indicator in the functional groups in (1)(H) and (1)(I) [intermediate removal].
- at least one surrogate or operational parameter that reflects the removal of 5 of 9 indicator groups
  - at least one of the five indicators represents at least one functional group in (1)(A) through (1)(G),
  - at least one of the five indicators represents at least one functional group in (1)(H) or (1)(I),
  - at least one surrogate or operational parameter is monitored continuously

# Example Application of surrogate/indicator framework to an treatment processes

Step 1 - Conduct occurrence study of indicators in the feedwater; one for each of the 9 groups.

[e.g., Acetaminophen, Atorvastatin, Carbamazepine, Caffeine, Naproxen, Gemfibrozil, DEET, Meprobamate, Musk ketone]

Step 2 - Define conditions for proper operation  
[size, dose, flow, etc.]

Step 3 - identify those surrogate or operational parameters with a measurable removal –

[e.g., UVA<sub>254</sub>, fluorescence, chloramine residual, or ozone residual]

# Example Application of surrogate/indicator framework to an overall treatment train

Step 4 – Submit test protocol.

Conduct piloting by spiking or monitor for detectable indicators (5 of 9 groups) to determine the removal differentials under normal operating conditions.

[e.g., DEET, Meprobamate, Caffeine,  
Acetaminophen, BPA]

Step 5 - Confirm operational conditions of full-scale, monitor surrogate / operational parameters; and monitor differential of selected indicator on a regular basis

[for good or intermediate removal depending on functional group]

## 2<sup>nd</sup> Option for AOP 60320.201 d

- Conduct pilot testing demonstrating that AOP will provide a 0.5-log (69%) reduction of 1,4-dioxane.
- Submit pilot testing protocol to CDPH for review. Pilot testing shall include challenge or spiking tests, using 1,4-dioxane, to demonstrate the 0.5-log reduction
- Establish surrogate and/or operational parameters that show the 0.5-log 1,4-dioxane design criteria is being met.
  - Dose
  - Chloramine residual
  - other
- At least one surrogate or operational parameter shall be capable of being monitored continuously

## 60320.201 e, f, and g

- e) During the full-scale operation of the AOP, continuously monitor the surrogate and/or operational parameters established.
- f) Within 60 days after completing 12-months of monitoring submit a report on AOP
  - Monitoring results
  - Removal differential of indicators
  - Efficacy of the surrogate and/or operational parameters to reflect the removal differential of the indicator compounds
  - actions taken, etc.
- g) Similar type of report on RO performance

## 60320.201 h and i

- h) Quarterly, tabulate the % that did not meet the surrogate and/or operational parameter limits that assure proper performance of RO and AOP. If > 10%, within 30 days after the end of the quarter:
  - 1) submit a report describing the corrective actions planned or taken
  - 2) consult with CDPH and, if required, comply with an alternative monitoring plan approved by CDPH
- i) Monthly collect grab samples after RO/AOP and analyze for all MCLs & NLs. If no exceedances, may apply for less monitoring after 12 mo.

# Additional Constituent Monitoring 60320.120 & 220

## Recycled municipal wastewater & monitoring wells

### ■ Quarterly for chemicals

- Priority Toxic Pollutants,
- Chemicals with notification levels,
- Any specified by CDPH based on source control
- May reduce to annual after review of 2 years data

### ■ Annually for constituents indicating the presence of municipal wastewater as specified by the Department

# Operation Optimization and Plan 60320.122 and 220

- Intent – to assure that the facilities are operated:
  - To achieve compliance with requirements
  - In a manner consistent with the project engineering report and findings of fact
  - To achieve optimal reduction of contaminants
  - Identify monitoring and analytical methods
- An operations plan must be up-to-date and receive approval

# Response Retention Time

## 60320.124 & 224

- Intent – that inadequately treated recycled water not enter a potable water system in the event of a treatment failure
- Between the recharge and extraction of the water, sufficient time must elapse to allow for:
  - The identification of any treatment failure
  - A response that will protect the public from exposure to inadequately treated water
    - Provide alternative source of water
    - Remedial treatment at the wellhead

# Response Time - 2

- The time is the aggregate of the period:
  - Between treatment verification samples or measurements
  - To make the measurement or analyze the sample
  - To evaluate the results
  - To make a decision
  - To activate the response
  - For the response work

# Response Time - 3

## ■ Retention time

- Verify with added tracer study
- Limit on credit prior to added tracer study

## ■ Minimum 2 months

- Less than 2 months is not credible given the uncertainty in the failure identification, SAT monitoring, response effectiveness, and institutional procedures
- This is not direct potable reuse
- Should not infer that 2 months will be readily approved

# Methods to Determine Retention Time to drinking water wells

Planning and Engineering Report Effort vs. Time			
Method	General Accuracy	General Level of Effort	Time multiplier
Formula (Darcy's)	Poor	limited info on aquifer	0.25
3-D model	Fair	A lot of info on aquifer	0.50
Intrinsic Tracer	Better	quantify existing indicators	0.67
Added Tracer	Best Available	track added tracer	1.0

# Monitoring Well 60320.126 & 226

## ■ Location/construction

- 2 weeks to 6 months travel time in the saturated zone downgradient to give chemical/physical processes a chance to work
- 30 days upgradient of well to give some warning
- Be able to sample each aquifer
- Must be getting recycled water

## ■ Monitoring

- Benchmark and each quarter for listed chemicals plus others specified by CDPH

# Reporting 60320.128 & 228

- Intent – to assure that the CDPH, Water Boards, and Public Water Systems with proximate wells are informed of the state of compliance with requirements
- Annual report on compliance and exceptions
- Updated Engineering Report every five years

# Alternatives 60320.130 & 230

- Intent - to accommodate unforeseen or yet to be approved methods of meeting the intent of a requirement
- Demonstrate “at least the same level of protection to public health”
- May be proposed for ANY requirement
- Evaluation by an independent panel of experts probably required

# Engineering Report 60323

- Intent – that the CDPH and Water Boards will have sufficient information to evaluate and permit the recharge project
- A report that:
  - Describes the project facilities and shows how each requirement will be met
  - Includes a contingency plan that assures that inadequately treated wastewater will not be delivered to the use area

# Articles in Summary

- 5.1 Surface Spreading w/o FAT – SAT
  - RWC critical
- 5.2 Subsurface – FAT
  - 100% RWC possible
- 5.3 Surface with FAT
  - 100% RWC possible
  - Possible reduced monitoring
  - Other regulatory benefits?

## ANCRONYMS

AOP	advanced oxidation process
CDPH	California Department of Public Health
CEC	compound of emerging concern
FAT	full advanced treatment
GRRP	Groundwater Replenishment Reuse Project
GW	groundwater
LRV	log reduction value
MCLs	maximum contaminant levels
MW	molecular weight
NL	notification level
NRC	National Research Council
RO	reverse osmosis
RWC	recycled water contribution
RWQCB	Regional Water Quality Control Board
SAT	soil aquifer treatment
T <sub>2</sub>	The retention time when the first two percent (2%) of recharge water arrives at the downgradient endpoint.
TOC	total organic carbon
UV	ultra-violet

**From:** [Cathy Chang](#)  
**To:** [Morris\\_Cris@Waterboards](mailto:Morris_Cris@Waterboards)  
**Cc:** [Erickson\\_Elizabeth@Waterboards](mailto:Erickson_Elizabeth@Waterboards); [Ted Johnson](#)  
**Subject:** Alamitos Barrier Permit (4/14/2014 version) - Comment on Groundwater Notification Requirement  
**Date:** Wednesday, May 28, 2014 9:38:59 AM  
**Attachments:** [Alamitos FOF 70804.pdf](#)  
[110421 WRD Letter to RWQCB re GW MCL Exc and TC Detect Notification Protocol ABP.pdf](#)

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Hi, Cris-

While reviewing the MRP of the revised tentative permit (4/14/2014 version) to help update our sampling protocol, I noticed the following provision, which we had comments on but was inadvertently left out of our written comments package. We'd greatly appreciate it if you could consider and address the following comments:

[MRP, section IV.5, page MRP-23](#)

5. Groundwater monitoring

"...If any of the monitoring results indicate that an MCL has been exceeded or coliforms are present in the monitoring wells at the Alamitos Barrier, the Project Sponsors shall notify the CDPH and 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."

#### Comments

We request that the above referenced provision be removed or modified, as shown below, for reasons outlined below:

Option 1 (*remove the entire provision that is based on now outdated 2004 CDPH Conditions*)

5. Groundwater monitoring

~~"...If any of the monitoring results indicate that an MCL has been exceeded or coliforms are present in the monitoring wells at the Alamitos Barrier, the Project Sponsors shall notify the CDPH and 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."~~

or

Option 2 (*insert the trigger language from the 2004 CDPH Conditions*)

5. Groundwater monitoring

"...If any of the monitoring results indicate that an MCL has been exceeded or coliforms are present in the monitoring wells at the Alamitos Barrier as a result of the use of recycled water, the Project Sponsors shall notify the CDPH and 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."

#### *Reasons*

1. The above referenced requirement is a carryover of a similar requirement (section IV.5.B) from the existing 2005 Permit, and this 2005 Permit requirement was based on the 2004 CDPH Conditions (condition #27, see attached for 2004 CDPH conditions) but did not

accurately capture the trigger for the notification and reporting (i.e., “as a result of the use of recycled water”; for additional details, see explanation in the attached WRD letter to LARWQCB, dated 4/21/2011).

2. This notification requirement pertaining to groundwater results is no longer part of the 2013 CDPH Conditions.
3. There have not been MCL exceedances or positive coliform detections in the recycled water. Past MCL exceedances or coliform detections observed in groundwater were not related to the use of recycled water but were indicative of pre-existing conditions and/or conditions in the shallow aquifers not subject to recycled water injection (see attached WRD letter dated 4/21/2011).

For reasons stated above, we request that the notification requirement be removed or modified accordingly. Feel free to contact me with any questions. Thanks so much.

Cathy

---

**Cathy Chang, PE, DEnv Water Quality Program Manager**

**Water Replenishment District of Southern California**

4040 Paramount Blvd. Lakewood, California 90712

Direct Phone/Fax (562) 275-4245

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# COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY

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GRACE ROBINSON HYDE  
Chief Engineer and General Manager

May 14, 2014  
File No. 31-370-40.4A

## **VIA ELECTRONIC MAIL**

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

Dear Mr. Unger:

### **Comments on Revised Tentative Waste Discharge Requirements and Water Recycling Requirements for Leo J. Vander Lans Water Treatment Facility and Alamitos Barrier Recycled Water Project (Order No. R4-2014-xxx, CI-8956)**

The Joint Outfall System<sup>1</sup> (Sanitation Districts) appreciates the opportunity to provide comments on the Revised Tentative Waste Discharge and Water Recycling Requirements Permit (Revised Tentative Permit) for the Alamitos Barrier Recycled Water Project (Project), dated April 14, 2014. While we appreciate the changes made to the previously released January 10, 2014 version of the tentative permit, we feel that substantial additional changes are needed to the Revised Tentative Permit in order to avoid adverse impacts to the use of recycled water for groundwater recharge.

As the Revised Tentative Permit is the first in the state to implement the June 2013 Draft Groundwater Replenishment Regulations and will likely set an important precedent, conditions set in the Revised Tentative Permit could affect not only this project, but other existing and planned groundwater recharge projects in the region. We support comments submitted by the Water Replenishment District of Southern California on the Revised Tentative Permit, and have some additional comments below. We urge you to carefully consider our comments and take the appropriate actions to continue to promote recycled water use to enhance local water supply sustainability.

#### Comments

##### *Correction of Sanitation Districts Information*

- The Sanitation Districts' name in Section I.6 should be consistent with our official name and be edited as follows: the ~~Los Angeles~~ County Sanitation Districts of Los Angeles County (County Sanitation Districts).
- Section I.6 states that the City of Long Beach owns the rights to the recycled water produced at both the Long Beach and Los Coyotes Water Reclamation Plants (WRPs). This is incorrect. The City of Long Beach only owns the right to the recycled water produced at the Long Beach WRP. This should be corrected.

##### *Disposal of Waste vs. Beneficial Reuse of Recycled Water*

- The Revised Tentative Permit treats the project as a disposal of waste rather than as a beneficial reuse of recycled water. For instance, Section III is entitled "Effluent Limitations." The term "effluent

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<sup>1</sup> Ownership and operation of the Joint Outfall System is proportionally shared among the signatory parties to the amended Joint Outfall Agreement effective July 1, 1995. These parties include County Sanitation Districts of Los Angeles County Nos. 1, 2, 3, 5, 8, 15, 16, 17, 18, 19, 21, 22, 23, 28, 29, and 34, and South Bay Cities Sanitation District of Los Angeles County.

limitations” is typically not used to regulate recycled water as the term is associated with limitations on discharges to surface waters regulated by the federal Clean Water Act and the National Pollutant Discharge Elimination System (NPDES) permit program. Instead, requirements on the treatment and quality of recycled water are referred to as “Recycled Water Specifications.” (For reference, see Orders No. R4-2003-0134, R4-2005-0061, and R4-2006-0069, which regulate three local seawater intrusion barrier projects.) Such terminology is important in helping to distinguish reuse of valuable recycled water from waste. The California Regional Water Quality Control Board, Los Angeles Region (Regional Board) has indicated that it highly encourages use of recycled water, and it can help to further the use of recycled water by using terminology that helps promote its use. All references to effluent in the Revised Tentative Permit should be changed to reference recycled water.

*Unwarranted Unfavorable Depiction of the Project*

- The Revised Tentative Permit appears to incorrectly characterize the current Project and the expansion as projects that will have a detrimental impact on groundwater. One example includes how arsenic and selenium are characterized in groundwater and recycled water per Finding 24 (with Table 1) and Finding 25. These findings (specifically, Table 1) are misleading and do not provide sufficient detail to explain historical and current groundwater quality conditions and the lack of impact on water quality as a result of the Project. Injection of recycled water does not occur into the Recent Aquifer (the uppermost aquifer) yet increases in arsenic and selenium are cited despite the fact that “arsenic and selenium have not been detected in the recycled water injected at the Barrier”, as mentioned at the end of Finding 25. Other constituents are cited as increasing in groundwater, yet their concentrations are lower than background concentrations before the Project started. Coliform is cited as increasing, although coliforms have never been detected going into the barrier water. For this and similar reasons, Table 1 should be modified or deleted. The intent of including Table 1 is unclear since it only leads to an unwarranted negative tone for the Project, especially since the Revised Tentative Permit does not offer a comprehensive characterization of the quality of the recycled water produced at the Leo J. Vander Lans Advanced Water Treatment Facility (LVLAWTF).

*Technically Unsupported Requirements*

- The Revised Tentative Permit includes new provisions that are not technically supported. For example, Section VI.3 (related primarily to nitrogen) states that:

“A 10% change in the water quality sampled at any of groundwater monitoring wells in Table M-20, over that predicted in the Project Sponsors’ first annual report and approved by the Executive Officer, shall trigger further analysis to be included in each subsequent annual report. These studies shall include a diagnosis of the cause of the increased nitrogen discharge and description of the changes recommended to improve the barrier operation, or to update the local Alamitos Barrier model or the Salt Nutrient Management Plan (SNMP) model. If wells continue to show a 10% deviation above the predicted quality for total nitrogen in two annual reports, the Order shall be re-evaluated. A reopener clause is provided in section VII.”

The major form of nitrogen that will be detected in groundwater is nitrate. Per the work done for the Central Basin and West Coast Basin SNMP and additional modeling conducted looking at the effect of injecting recycled water at a concentration of 10 mg/L nitrate-N (the California Department of Public Health [CDPH] total nitrogen condition and the Basin Plan objective), the predicted change in assimilative capacity for nitrate in the Central Basin Pressure area where the Project is located would be 0.15 mg/L as nitrogen. Ten percent of this value is 0.015 mg/L, which is an inconsequential change and certainly not worthy of further action. Further, the requirement that the annual report be “approved by the Executive Officer” is confusing and sets a new precedent on how annual informational reports are handled by the Regional Board. This provision should be deleted.

*Duplicative Requirements*

- Sections I, II, III, and IV of the Revised Tentative Permit contain a number of requirements that are duplicative of the Conditions required by CDPH (incorporated into the Revised Tentative Permit by

reference under Section IV.2). To avoid unintended changes to the requirements specified by CDPH, to avoid potential confusion in implementing and enforcing the Permit requirements, and to avoid creating dual liability for the Project Sponsors, the Permit should not duplicate the CDPH Conditions.

*Inappropriate Effluent Limits*

- Pathogen reduction requirements for enteric virus, Giardia, and Cryptosporidium specified in CDPH Conditions 6 and 7 are inappropriately included as effluent limits in Table 7 of the Revised Tentative Permit. These conditions were intended and written as treatment performance indicator of primary and secondary processes at the Long Beach Water Reclamation Plant; microfiltration, reverse osmosis, and ultraviolet (UV) advanced oxidation at the LVLAWTF; and for virus, six months of underground retention time. Therefore, they should be deleted from Table 7. Also, only one specification for each requirement should be included in the permit. For specifications based on CDPH Conditions (Section IV.2), the Permit should only include the specific CDPH Condition.

*Excessive and Unnecessary Groundwater Monitoring Requirements*

- The Revised Tentative Permit contains excessive monitoring requirements for groundwater. As an example, Footnote 29 associated with Table M-20 of the Monitoring and Reporting Program (MRP) states, “The modified groundwater monitoring frequency approved by CDPH is included in this table, and shall be maintained for each well **until 6 months before the arrival of recycled water** is anticipated by modeling estimates. At that time, the Project Sponsors shall begin the quarterly **monitoring of all those constituents listed in Table M-20**. After four quarters of sampling and confirmation that the results are not unexpected, the Project Sponsors may resume the monitoring frequency approved by CDPH in 2007.” [emphasis added] Typically, advanced water treatment processes similar to those employed at the LVLAWTF are capable of producing pure water, in which almost all of the contaminants listed in Table M-20 are not detected. Therefore, the merit of the requirement to accelerate the frequency of groundwater monitoring for 188 chemicals on the basis of anticipated arrival of recycled water though most of the contaminants are not present in the recycled water injected is questionable. Such excessive and technically unsupported requirements unnecessarily increase the cost of the Project and discourage other similar projects from moving forward in the future. It is recommended that this requirement be removed from the MRP. Furthermore, each requirement of the MRP should be examined carefully as to its necessity. Any monitoring requirements beyond those required in the existing permit should be individually justified.

The Sanitation Districts thank you in advance for your careful consideration of these comments. With the current drought, it is essential that the proposed expansion of the LVLAWTF move forward in a timely manner, and without unnecessary regulatory burdens. The Project will free up five million gallons a day of imported water that would otherwise be used in the Alamitos Barrier. If you have any questions concerning this letter or need additional information, please contact Ann Heil at (562) 908-4288, extension 2803.

Very truly yours,  
Grace Robinson Hyde



Ann T. Heil  
Supervising Engineer  
Monitoring Section

ATH:MG:lmb

cc: [via email only]

Deborah Smith, David Hung, Cris Morris - Los Angeles Regional Water Quality Control Board  
Cindy Forbes, Kurt Souza - California Department of Public Health  
Cathy Chang - Water Replenishment District of Southern California



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May 12, 2014

Mr. Samuel Unger, Executive Officer  
Los Angeles Regional Water Quality Control Board  
320 West Fourth Street, Suite 200  
Los Angeles, CA 90013  
Via email: samuel.unger@waterboards.ca.gov; eerickson@waterboards.ca.gov

**Re: Comments on Tentative Waste Discharge and Water Recycling Requirements for the Leo J. Vander Lans Water Treatment Facility and Alamitos Barrier Recycled Water Project**

Dear Mr. Unger,

On behalf of Heal the Bay, we submit the following comments to the Los Angeles Regional Water Quality Control Board ("Regional Board") on the Tentative Waste Discharge Requirements and Water Reclamation Requirements (Order No. R4-2014-XXX) for the Leo J. Vander Lans Water Treatment Facility and Alamitos Barrier Recycled Water Project ("Permit"). Heal the Bay is an environmental organization with over 15,000 members dedicated to making Southern California coastal waters and watersheds safe, healthy, and clean for people and aquatic life.

We have long-supported seawater intrusion barrier projects using recycled water and support this project moving towards 100% recycled water use. We have anxiously awaited the California Department of Public Health regulations for groundwater replenishment with recycled water. The draft regulation, released in June 2013, allows for no maximum recycled water contribution for replenishment projects when state-approved treatment and monitoring methods are applied. We believe allowing groundwater replenishment projects to use 100% recycled water is prudent when treatment and monitoring requirements are met. Reducing potable water demand by off-setting the project with increased recycled water is essential for ensuring a sustainable water supply in California. In light of the current drought California is facing and expected water shortages for regions due to climate change and population growth, it is imperative water supplies are diversified to the fullest extent possible. We believe using 100% recycled water for the seawater barrier intrusion project will help to achieve this goal.

We are supportive of the inclusion of effluent limitations in the Permit. However, we are concerned that several of the proposed limits are not stringent enough to ensure human health protection. The draft Permit's total nitrogen effluent limitation of 10 mg/L is less stringent than the 2005 permit's 5 mg/L nitrogen requirement. We are concerned that this relaxation may degrade current water quality in the Central Basin. How can we be sure this nitrogen relaxation will not degrade the groundwater basin in the long term? Modeling data is not included in the Permit; therefore we are unable to review SNMP model conclusions.

Further, it is encouraging to see additional groundwater monitoring, reporting, and trend analysis requirements for total nitrogen added to the Permit. However, we feel the duration of additional analysis should not be limited to one year, as it is estimated to take 4.3 years for injected water to reach the closest domestic well. Thus, we recommend that the monitoring, reporting, and trend analysis requirements be extended to five years. Lastly, we believe if a 10% deviation above predicted quality for total nitrogen in two annual reports is observed



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within the proposed *five year study period*, the order should be re-evaluated to account for potential impacts of nutrients on the Basin.

We are also concerned that the draft Permit does not include a numeric effluent limit for NDMA. The Vander Lans facility failed to prevent the injection of high concentrations of NDMA, above constituent reporting limits, in May of 2008. High concentrations of NDMA pose human health risks in high concentrations. Although the Permit requires “special conditions” for NDMA, such as documentation of high concentrations events and a schedule for completion of corrective action, these provisions are inadequate to protect human health. As written, the Permit would allow high concentrations of NDMA to be injected into groundwater supplies for upwards of 16 weeks without action by the CDPH. Additionally, there is no NDMA concentration trigger requiring immediate suspension of recycled water injection in the event that NDMA concentrations pose human health risks. This is concerning as a discharge of NDMA could allow degradation of a municipal water supply in which millions of Angelenos depend upon daily. To protect this water resource, the Permit should include an effluent limitation of 10 ng/L<sup>1</sup> for NDMA, at a minimum. Moreover, the Permit should include a 300 ng/L<sup>2</sup> NDMA threshold for injected water; if this threshold is exceeded, injection of advanced treated recycled water shall cease and be discharged to the MS4 system. Recycled water injection should only resume once NDMA concentrations fall below 300 ng/L for a certain number of days. Of note, the draft Permit released January 2014 included a performance goal of 10 ng/L for NDMA; why was this changed in the most recent Permit?

Finally, we believe a comprehensive monitoring program must be included in the Permit for influent, effluent, and groundwater to ensure water quality is not compromised. When compared to the 2005 permit, pH, turbidity, TOC, and NDMA are proposed to be discontinued from influent monitoring. What was the reasoning for removing these constituents from influent monitoring in the Permit? Furthermore, we are concerned with the proposed quarterly NDMA effluent monitoring frequency in the Permit. Although the Permit requires monthly effluent monitoring for NDMA during the first year of the Permit (reduced to quarterly after first year), we feel the reduced frequency may not capture all future discharging scenarios. Therefore, we urge the Regional Board to require monthly NDMA effluent monitoring for the entire permit cycle.

In sum, moving forward with increased recycled water use in our region is extremely important to ensure a sustainable water supply, and we commend the discharger for proposing such a project. However, we need to ensure that the increased discharge is not impacting water quality. Thus, we ask the Regional Board to take a more precautionary approach to this permit as described above. Thank you for consideration of these comments. If you have any questions please feel free to contact use at (310) 451-1500.

Sincerely,

Peter Shellenbarger, MESM  
Science and Policy Analyst, Water Quality  
Heal the Bay

Kirsten James, MESM  
Science and Policy Director, Water Quality  
Heal the Bay

<sup>1</sup> CDPH establish NDMA drinking water notification level, 10 nanogram per liter (ng/L).

<sup>2</sup> CDPH establish NDMA drinking water reporting level, 300 nanogram per liter (ng/L), at which the responsible water agency is required to stop drinking water delivery.



RON CHAPMAN, MD, MPH  
Director & State Health Officer

State of California—Health and Human Services Agency  
California Department of Public Health



EDMUND G. BROWN JR.  
Governor

April 29, 2014

**Samuel Unger, P.E., Executive Officer**  
**California Regional Water Quality Control Board**  
**Los Angeles Region**  
**320 West 4<sup>th</sup> Street, Suite 200**  
**Los Angeles, CA 90013**

**Subject: Alamitos Barrier Recycled Water Project**  
**Order No. R4-2014-xxx**

The Department of Public Health, Drinking Water Program (CDPH) has reviewed the draft Order No. R4-2014-xxx provided to the Department with an accompanying letter dated April 15, 2014. The CDPH has the following comments on the proposed WDR/WRR and supports the Regional Boards efforts to permit the project.

- Page MRP-12, Table M-5, the Enteric virus calculation needs to be conducted daily.
- Page MRP-12, footnote 19 and Page MRP-17 footnote 25, continuous online analyzers daily minimum, maximum and average values need to be reported.
- Page MRP-19, c, iii. The last sentence needs to include the total UV power applied.

If you have any questions, please call me at (805) 566-1326.

Sincerely,

**Kurt Souza, P.E., Chief**  
**Southern California Section**  
**CDPH-DWFOB**

**cc: Ted Johnson – WRD**  
**Cathy Chang - WRD**