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August 16, 2017

Ms. Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-2000

Dear Ms. Townsend:

Subject: Comment Letter – Bacteria Provisions

The Los Angeles Department of Water and Power (LADWP) would like to thank the State Water Resources Control Board (SWRCB) for the opportunity to comment on the Draft Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Bacteria Provisions and Water Quality Standards Variance Policy¹ (Draft Bacteria Provisions), as well as the Draft Amendment to the Water Quality Control Plan for Ocean Waters of California – Bacteria Provisions and a Water Quality Standards Variance Policy² (Draft Ocean Plan).

LADWP is the largest municipally-owned utility in the nation, which serves a 465 square-mile area in Los Angeles with approximately four million residents and a portion of the Eastern Sierras in Owens Valley. Its mission is to provide essential public services (water and power) for grid reliability and public health and safety in an efficient and environmentally responsible manner. LADWP owns its electrical generation, distribution, and transmission systems as well as its 233-mile, gravity fed Los Angeles Aqueduct, which brings water to the City of Los Angeles (City). LADWP's Water System

¹ State Water Resources Control Board, 2017. "Draft Part 3 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California – Bacteria Provisions and Water Quality Standards Variance Policy". June 30, 2017. Accessed July 26, 2017 at, http://www.waterboards.ca.gov/bacterialobjectives/docs/draft_provisions.pdf

² State Water Resources Control Board, 2017. "Draft Amendment to the Water Quality Control Plan for Ocean Waters of California – Bacteria Provisions and a Water Quality Standards Variance Policy". June 30, 2017. Accessed July 26, 2017 at, http://www.waterboards.ca.gov/bacterialobjectives/docs/draft_ocean_plan_provisions.pdf

supplies approximately 177 billion gallons of water annually and an average of 446 million gallons per day to its residential and business customers. LADWP has multiple facilities subject to NPDES discharge permits, as well as industrial facilities subject to the Industrial General Permit, and a number of reservoirs, which would likely be affected by the proposed policy.

LADWP understands that the need to develop updated Bacteria Objectives is fundamental to achieving water quality improvements in recreational use water bodies. LADWP recognizes and supports the protection that these Bacteria Objectives provide for those water bodies. LADWP's comments on the Draft Bacteria Provisions and Draft Ocean Plan are as follows:

1. It is not clear how changes to the Bacteria Objectives will be implemented

LADWP has reviewed the Draft Staff Report; Draft Bacteria Provisions; and Draft Ocean Plan and has concerns that not enough guidance is provided as to how the policies will be implemented.

It is respectfully suggested that the SWRCB address NPDES permitting issues within the draft policy, specifically addressing how the new bacteria objectives will be used in permitting. By doing so, the SWRCB could provide a clear understanding on the reasonable potential analysis and how it should be conducted; how objectives are to be implemented, i.e. as BMPs, TBELs, or WQBELs; how objectives will be implemented in permits when not required by a TMDL; how objectives will be implemented in permits before a TMDL is developed, and if/how permit limitations can later be adjusted; what the process is for existing TMDLs to be updated/evaluated/rescinded given the new standards; and how these provisions will be applied to existing and future NPDES permits.

The LADWP requests that the SWRCB provide guidance to the Regional Water Boards regarding implementation of the revised objectives.

2. The use of a rolling Geometric Mean and STV approaches

The Draft Bacteria Provisions and Draft Ocean Plan revise how Bacteria Objective limitations will be calculated. In doing so, the use of the Single Sample Maximum is replaced by the use of a statistical threshold value (STV), and the Geometric Mean is changed from a geometric mean using at least 5 samples in a 30-day period to a Geometric Mean in a rolling six-week period. LADWP is concerned that the revised averaging periods to determine compliance may have adverse effects on exceedance reporting.

If a rolling six-week averaging period is used, each weekly sample would be used to compute overlapping geometric means – this approach may cause a single bacteria

objective exceedance to cause multiple exceedances, even though the bacteria objectives were met six weeks prior and six weeks after the exceedance.

The LADWP respectfully suggests that maintaining the current practice for calculating the geometric mean using at least 5 samples in a 30-day period will reduce the possibility of a single exceedance leading to double or triple jeopardy with respect to exceedance while maintaining REC-1 standards.

Additionally, the LADWP requests clarification on how the STV approach will be applied, specifically whether the STV will be used only when geometric mean data is unavailable, and whether the STV can ever be exceeded.

3. Addressing natural sources of bacteria using the Natural Source Exclusion approach

The Draft Bacteria Provisions and Draft Ocean Plan each provide tools in the form of a Natural Source Exclusion Approach in order to address natural sources of bacteria. While the LADWP appreciates the SWRCB's efforts to provide a vehicle for addressing natural sources of bacteria, the LADWP offers the following concerns:

A) Application of the Natural Source Exclusion Approach is unclear.

During the July 10, 2017 Staff Workshop, SWRCB staff indicated that a Quantitative Microbial Risk Assessment (QMRA) is the process by which the Natural Sources Exclusion could be applied. Additionally, SWRCB staff noted that the quantification of natural sources may be calculated as the total minus the human contribution (presumably also the livestock). EPA technical guidance document *Site-Specific Alternative Recreational Criteria Technical Support Materials for Predominantly Non-Human Fecal Sources*, which appears to be the technical document which describes how a Natural Sources Exclusion is used within a QMRA, is cited on the EPA website within the 2012 Recreational Water Quality Criteria section, but appears to be unavailable³.

The LADWP requests that the Draft Bacteria Provisions and Draft Ocean Plan be revised to include further clarification regarding how a Natural Sources Exclusion may be applied, specifically within the context of a QMRA.

³ Environmental Protection Agency, accessed July 21, 2017 at <https://www.epa.gov/wqc/2012-recreational-water-quality-criteria-documents>

B) The Natural Source Exclusion Approach should be used outside of a TMDL context.

The Draft Bacteria Provisions and Draft Ocean Plan each allow for a Natural Source Exclusion approach to address natural sources of bacteria, but only in the context of a TMDL – the LADWP recommends that these approaches be allowed outside the TMDL context.

This can be accomplished by inserting “controllable factors” language into the new standards. Pursuant to Resolution No. R8-2012-001, the Santa Ana Basin Plan includes a discussion about “controllable factors” as follows:

Some of these water quality objectives refer to “controllable sources” or controllable water quality factors.” Controllable sources include both point and nonpoint source discharges, such as conventional discharges from pipes and discharges from land areas or other diffuse sources. Controllable sources are predominantly anthropogenic in nature. Controllable water quality factors are those characteristics of the discharge and/or the receiving water that can be controlled by treatment or management methods. Examples of other activities that may not involve waste discharges, but which also constitute controllable water quality factors, include the percolation of storm water, transport/delivery of water via natural stream channels, and stream diversions. Uncontrollable sources of pollutants can occur naturally or as the result of anthropogenic activities. These sources are not readily managed through technological or natural mechanisms.⁴

LADWP recommends that the Draft Bacteria Provisions and Draft Ocean Plan each be revised to adopt such language, or language consistent with the Santa Ana Basin Plan, which would allow the Natural Source Exclusion approach to be applied outside of a TMDL context.

C) The Natural Source Exclusion Approach should allow for the exceedance of the Geometric Mean as well as the STV.

A reading of the Draft Bacteria Provisions and Draft Ocean Plan indicates that the Natural Source Exclusion approach allows for exceedances of the Bacteria Objectives STV, but not the geometric mean. The LADWP respectfully suggests that this language appears to be inconsistent with EPA recommendations that

⁴ Santa Ana Basin Plan, Chapter 4, pg. 2

allow for revised objectives based on whether they are “equally protective⁵” through the use of a QMRA.

LADWP recommends that the Draft Bacteria Provisions and Draft Ocean Plan each be revised to include language that allows for exceedances of the Bacteria Objective STV, as well as the Geometric mean, based on the use of a QMRA. This change would harmonize the Draft Bacteria Provisions and Draft Ocean Plan with EPA recommendations and insure equally protective Bacteria Objectives under the Natural Source Exclusion Approach.

4. It is unclear how Bacteria Objectives or tools outlined in the Staff Report will impact the Lahontan Basin Plan bacteria objectives

The Draft Bacteria Provisions have proposed revised water quality bacteria objectives for REC-1 water bodies with the stated intention of providing a consistent regulatory framework throughout the State of California. Although the intent of the Bacteria Provisions is to provide consistent REC-1 standards throughout the State, LADWP believes that there may be uncertainty as to whether the Draft Bacteria Provisions will apply to the Lahontan Basin Plan’s current bacteria objectives.

During the July 10, 2017 SWRCB Staff Workshop there were differences of opinion amongst the panelists regarding whether the revised bacteria objectives would supersede Lahontan bacterial water quality objectives of 20 per 100 mL in REC-1 water bodies. The LADWP requests that the SWRCB clarify whether the revised bacteria objectives, as well as the implementation provisions such as the Natural Source Exclusion approach; high flow suspension; seasonal suspension; or Water Quality Standards Variance would apply to the Lahontan bacteria objectives.

Additionally, the LADWP offers the following language regarding the current Lahontan Basin Plan Bacteria Objectives:

A) The fecal coliform standards in the Lahontan basin plan are not based on current science.

The Draft Staff Report includes the following discussion regarding the Lahontan Regional Water Board’s current bacteria objectives:

In the North Coast and the Lahontan Regional Water Boards, the REC-1 bacteria objectives for fecal coliform are more stringent than the 200/100ml criterion established by U.S. EPA in 1976. In the Lahontan Regional Water Board,

⁵ U.S. Environmental Protection Agency, “Overview of Technical Support Materials: A guide to the Site-Specific Alternative Recreational Criteria TSM Documents”. December 2014. Accessed on July 26, 2017, at <https://www.epa.gov/sites/production/files/2015-11/documents/guide-sitespecific-alternative-recreational-criteria-documents.pdf>

the current bacterial objective is a log mean of 20/100 ml of fecal coliform. This objective is not linked to any specific beneficial use and applies to all waters within the region.⁶

Circa September 2012, the Lahontan Regional Water Quality Control Board (LRWQCB) offered its response to United States Department of Agriculture (USDA) comments on the 2012 Triennial Review of the Lahontan Basin Plan and defended the use of fecal coliform as “scientific-state-of-knowledge” by citing a 1976 USEPA recommendation⁷. In the 1986 EPA Ambient Water Quality Criteria, the EPA recommended the use of alternative indicators due to the lack of correlation between fecal coliform and illness in swimmers, stating:

The freshwater studies confirmed the findings of the marine studies with respect to enterococci and fecal coliforms in that the densities of the former in bathing water showed strong correlation with swimming associated gastroenteritis rates and densities of the latter showed no correlation at all. The similarities in the relationships of *E. coli* and enterococci to swimming associated gastroenteritis in freshwater indicate that these two indicators are equally efficient for monitoring water quality in freshwater, whereas in marine water environments only enterococci provided a good correlation.⁸

The 1986 EPA Ambient Water Quality Criteria expected that the more reliable Fecal Indicator Bacteria (FIB) would replace currently used fecal and total coliform:

EPA recognizes that it will take a period of at least one triennial review and revision period for States to incorporate the new indicators [*E. coli* and enterococci] into State Water Quality Standards and start to accrue experience with the new indicators at individual water use areas.⁹

Thus, fecal coliform should not be considered as the current scientifically-justified FIB for recreational waters more than 30 years later.

⁶ State Water Quality Control Board Draft Staff Report dated June 30, 2017, pg. 68.

⁷ LRWQCB response to USDA letter dated September 26, 2012, accessed July 25, 2017 at http://www.waterboards.ca.gov/lahontan/board_info/agenda/2013/jan/item_13.pdf (pg. 57).

⁸ U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Bacteria – 1986, pg. 6, accessed on July 25, 2017 at http://waterboards.ca.gov/water_issues/programs/tmdl/records/region_5/1986/ref2435.pdf

⁹ U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Bacteria – 1986, pg. 9, accessed on July 25, 2017 at http://waterboards.ca.gov/water_issues/programs/tmdl/records/region_5/1986/ref2435.pdf

B) The current fecal coliform standards in the Lahontan basin plan are based on an incorrect extrapolation of epidemiological data.

Circa September 2012, the LRWQCB offered the following response to USDA comments:

In sum, the available scientific evidence, taken as a whole, demonstrates that the presence of FIB (including fecal coliform bacteria) in water indicates a risk to human health. The existing 20 cfu/100mL standard has a risk to human health of less than one person in 1000 to become ill who contact waters containing fecal contamination.¹⁰

Based on the 1986 EPA data, fecal coliform was shown to have no correlation to illness rate. Without a correlation, you cannot extrapolate the 200 per 100 mL objective's estimated illness rate to the 20 per 100 mL rate.

The initial use of the 200 per 100 mL objective was based on studies which translated the fecal coliform indicator from total coliform concentrations measured in epidemiological studies. These studies found no statistically significant increase in the rate of illness at levels equivalent to 400 fecal coliforms per 100 mL (so 400 per 100 mL represented the level at which no effect of fecal coliform could be observed). The objectives were set at half that (200 per 100 mL) to provide a safety buffer. The Lahontan region's use of 20 per 100 mL, is equal to 20 times lower than the level at which the studies showed no effect at all. Therefore, it is not possible to quantitatively estimate the risk level based on the lower objective. The use of a fecal coliform measurement that is 10 times less than that number, which represented half of the lowest detected illness risk in epidemiological studies more than 40 years old and subsequently replaced by newer studies with better data, is not scientifically defensible in 2017.

The EPA's suggested illness rate of 8 per 1000 swimmers for a 200 per 100 mL fecal coliform level was intended to approximately translate current (1986 era) fecal coliform data and measurements while the new indicators were put in place, not serve as a reasonable target for future objectives:

EPA's evaluation of the bacteriological data indicated that using the fecal coliform indicator group at the maximum geometric mean of 200 per 100 ml, recommended in Quality Criteria for Water could cause an estimated 8 illness per 1,000 swimmers at fresh water beaches and 19 illness per 1,000 swimmers at marine beaches. These relationships are

¹⁰ LRWQCB response to USDA letter dated September 26, 2012, accessed July 25, 2017 at http://www.waterboards.ca.gov/lahontan/board_info/agenda/2013/jan/item_13.pdf (pg. 58).

only approximate and are based on applying ratios of the geometric means of the various indicators from the EPA studies to the 200 per 100 ml fecal coliform criterion. However, these are EPA's best estimates of the accepted illness rates for areas which apply the EPA fecal coliform criterion.¹¹

Further, the lack of a correlation between fecal coliform and illness rate in epidemiological studies means that it is not possible to extrapolate to an illness rate of "less than one" per 1000 swimmers simply by dividing the EPA's 1986 estimated illness rate by 10. As there is no correlation between illness and fecal coliform, there should be no expectation of a linear relationship.

The 1986 EPA Ambient Water Quality Criteria recommend the use of *E. coli* and enterococcus as fecal indicator bacteria in fresh and marine waters, respectively, because they were correlated with occurrences of gastrointestinal illnesses in a series of epidemiological studies, in which fecal coliform "showed no correlation at all".¹² Holding all surface waters to a standard based on an indicator that has been shown to not correlate with negative effects is not protective of beneficial uses. The bacterial objectives outlined in the Staff Report allow for additional protections for Lake Tahoe, a unique resource, and are sufficiently protective for other REC-1 waters in the Lahontan Region.

The stated purpose of the revised statewide bacteria water quality objectives is to ensure that bacterial objectives for REC-1 waters are based on the most recent science¹³ and are consistently updated statewide. "The Bacteria Provisions seek to establish consistent statewide water quality objectives for California waters¹⁴". The Lahontan Regional Water Board's current bacteria objectives do not appear to be indicative of human health risk or based on current data. As such, the LADWP requests that the SWRCB work with the Lahontan Regional Water Board's Bacteria Objectives in the Basin Plan to ensure that the revised statewide bacteria objectives are consistently applied throughout the state.

¹¹ U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Bacteria – 1986, pg. 9, accessed on July 25, 2017 at http://waterboards.ca.gov/water_issues/programs/tmdl/records/region_5/1986/ref2435.pdf

¹² U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Bacteria – 1986, pg. 6, accessed on July 25, 2017 at http://waterboards.ca.gov/water_issues/programs/tmdl/records/region_5/1986/ref2435.pdf

¹³ The Bacteria Objectives are based on the U.S. EPA 2012 Recreational Water Quality Criteria.

¹⁴ State Water Quality Control Board Draft Staff Report dated June 30, 2017, pg. 5.

5. The Shellfish Harvesting Standards as outlined in Draft Ocean Plan should be reserved for commercial shellfish growing areas

The Draft Ocean Plan contains provisions that set the following Shellfish Harvesting Standards:

2. Shellfish Harvesting Standards

a. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Water Board, the following bacterial objectives shall be maintained throughout the water column:

(1) The median total coliform density shall not exceed 70 per 100 mL, and not more than 10 percent of the samples shall exceed 230 per 100 mL.

LADWP is concerned that the Shellfish Harvesting Standards that currently exist in the Draft Ocean Plan may be potentially unattainable.

The Draft Ocean Plan objective is derived from the Federal National Shellfish Sanitation Program (NSSP), which was designed to apply where shellfish are intended for commercial sale, in transactions that traverse state boundaries.¹⁵ The LADWP respectfully suggests that because these Shellfish Harvesting Standard Limits were originally derived from the NSSP, they are part of a larger program of implementation within the NSSP, and may not be suitable for use in isolation as part of the Draft Ocean Plan Provisions. In particular, the application of this standard to areas with no viable or historical shellfish fisheries on the basis that “shellfish may be harvested” for future use does not seem appropriate.

In order to reduce uncertainty regarding where the Shellfish Harvesting Standards will apply, the LADWP recommends that the Bacteria Provisions be revised to include language that explicitly provides that the California Department of Public Health (CDPH) will continue to have primary regulatory authority over shellfish commercial growing areas, particularly because said areas exist only in a few clearly designated areas¹⁶. LADWP further recommends that the proposed bacteria objectives for Shellfish Harvesting Standards be revised to include language that provides that such bacteria objectives are to be applied solely to receiving waters, and not effluent waters.

¹⁵ National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish, 2015 Revision (2017).

¹⁶ California Commercial Shellfish Growing Areas Summary, accessed July 21, 2017, at <https://archive.cdph.ca.gov/HealthInfo/environhealth/water/Pages/CommercialShellfishGrowingAreas.aspx>

6. The objective and use of LREC-1 is unclear based on a reading of the Draft Bacteria Provisions

The Draft Bacteria Provisions outlines a new beneficial use definition for Limited Water Contact Recreation (LREC-1) water bodies. During the Staff Workshop held on July 10, 2017, the State Water Resources Control Board (SWRCB) staff provided the following proposed definition for LREC-1:

Uses of water that support limited recreational activities involving body contact with water, where the activities are predominantly limited by physical conditions such as very shallow water depth or restricted access and, as a result, body contact with water and ingestion of water is infrequent or insignificant.

The LADWP is concerned by the uncertainty of which physical condition factors will be considered in order for a water body to be classified as LREC-1. The current LREC-1 definition is predicated on a physical condition, such as a “shallow water depth”. SWRCB staff indicated in their response to comments that the shallow water depth will be determined on a “case by case basis based on the site”. LADWP recommends that the proposed Draft Bacteria Provisions for LREC-1 be revised to clarify what physical condition factors would be considered when determining whether a water body meets the LREC-1 standard in order to reduce any confusion on the classification of a LREC-1 water body.

7. The Bacteria Objective policy does not address REC-2

The Draft Bacteria Provisions and Draft Ocean Plan provide new Bacteria Objectives and tools to meet those objectives for REC-1 use water bodies. The LADWP respectfully requests that the proposed natural sources / reference approaches for REC-1 be broadened to apply to REC-2. The SWRCB can ease the challenge of complying with REC-2 standards by applying science based approaches currently proposed for REC-1 use by the policy. The LADWP recommends that the Santa Ana Basin Plan approach be taken for REC-2 – i.e. waters designated REC-2 be regulated using an anti-degradation approach, and that existing numeric objectives for fecal coliform for REC-2 uses be deleted.

Additionally, the LADWP suggests that the natural source/reference approaches, high flow suspension, and seasonal suspension, apply to REC-2 as well as REC-1.

8. The Economic Analysis may not reflect the actual economic impact of the Draft Bacteria Provisions and Draft Ocean Plan

On June 27, 2017 the SWRCB released an Economic Analysis¹⁷ of the Draft Bacteria Provisions and Draft Ocean Plan to address the potential economic impact related to compliance with the water quality Bacteria Objectives. The costs used in the economic analysis are based on Bureau of Labor Statistics data from between 2004 and 2006.

The LADWP believes that the use of older data to estimate the economic impact of the Draft Bacteria Provisions and Draft Ocean Plan may not reflect the current day cost to implement the proposed water quality bacteria objectives. Implementation of the proposed Bacteria Objectives has the potential to impact LADWP's generating stations, lakes and reservoirs, and industrial facilities that may directly impact its ratepayers.

The LADWP respectfully suggests that the SWRCB revise the Economic Analysis of the impact of the Draft Bacteria Provisions and Draft Ocean Plan to include the latest available data.

The LADWP appreciates this opportunity to provide comments on the proposed Bacteria Objectives and looks forward to working with SWRCB staff in this process. Should you have any questions regarding this letter, please contact me at (213) 367-0436 or Edgar Gomez of the Wastewater Quality and Compliance Group at (213) 367-4425.

Sincerely,



Katherine Rubin
Manager of Wastewater Quality and Compliance

EG:
c: Edgar Gomez

¹⁷ Abt Associates, Inc. 2017. Economic Analysis of Proposed Water Quality Objectives for Pathogens in the State of California.