CALIFORNIA ASSOCIATION of SANITATION AGENCIES

1225 8th Street, Suite 595• Sacramento, CA 95814 • TEL: (916) 446-0388 • www.CASAweb.org

December 21, 2018

Submitted via email to commentletters@waterboards.ca.gov

Felicia Marcus, Chair
State Water Resources Control Board (State Water Board)
1001 I Street, 25th Floor
Sacramento, CA 95814

Subject: CASA Comments on Proposed Toxicity Provisions

Dear Chair Marcus:

The California Association of Sanitation Agencies (CASA) appreciates the opportunity to comment on the proposed Toxicity Provisions within the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Toxicity Provisions), as well as the supporting appendices and the Draft Staff Report (Staff Report). CASA is an association dedicated to protecting public health and the environment through effective wastewater treatment. We promote sustainable practices such as water recycling, biosolids management, and renewable energy production. We represent over 100 public agencies in California and focus on advocacy, education, and leadership.

CASA has been working with members and staff of the State Water Resources Control Board (State Water Board) for several years on various approaches to addressing toxicity on a statewide level. There have been many positive changes to the Toxicity Provisions between the 2012 version and the current proposal, and we appreciate the recent workshops and materials designed to clarify the approach staff is recommending to address toxicity for inland surface waters. Unfortunately, many of our previously articulated concerns regarding fundamental elements of the Toxicity Provisions remain unresolved. The required use of a particular species (*Ceriodaphnia dubia*) is at the core of our concerns related to test variability, incorrect determinations of toxicity, and ultimately increased violations based on inaccurate measures of real toxicity. In addition, there are several areas we will discuss below where clarification is needed to ensure the overall regulatory approach is implementable and makes sense. Finally, to the extent that other wastewater association commenters (including the Bay Area Clean Water Agencies, Central Valley Clean Water Association, and Southern California Alliance of POTWs) address other implementation issues not discussed in detail here, we support those comments and incorporate them by reference.

Ongoing Concerns

1. Imposition of Numeric Limits for Whole Effluent Toxicity Testing is Inappropriate and Will Not Improve Environmental Outcomes

In response to the various iterations of the Toxicity Provisions that have been released, CASA has consistently submitted comments noting that numeric objectives and associated numeric limits for

chronic toxicity are both unnecessary and inappropriate. Numeric limits will not result in greater environmental protection than narrative limits with numeric triggers, which have been sufficiently protective of receiving water beneficial uses for more than a decade. This position has not changed.

From an overarching perspective, it is important to remember that whole effluent toxicity (WET) testing is a biological test, not a chemical test. Unlike chemical testing, the effects measured must be compared to effects on unexposed organisms. Further, "toxicity" is not a pollutant per se, but rather a response or condition that results if (presumably) chemicals are present in amounts or combinations deemed harmful to certain organisms.

Perhaps more importantly, no proactive or immediate reactive actions can be performed to prevent or control toxicity based on the violation of a numeric toxicity limit (aka a "test failure") until a contaminant cause has been identified. This is particularly true of POTW dischargers. Until the source of the toxicant has been identified through an appropriate Toxicity Reduction Evaluation (TRE) and/or Toxicity Identification Evaluation (TIE) process, it is impossible to proactively address toxicity because the cause is typically unknown. Thus, numeric limits do nothing more than impose liability on dischargers for circumstances generally outside of their control, based on the presence of unknown chemicals for which there may be no specific objectives, all while the discharger investigates for the cause of the apparent toxicity.

Instead, narrative limits with appropriate numeric triggers are far more suitable given the inherent differences between standard chemical testing and WET testing. Narrative limits are equally protective of the environment while avoiding the additional costs, compliance, and liability issues created for public agencies through imposition of numeric limits. A positive test result for toxicity should be used as a trigger to investigate what specific chemicals or classes of chemicals may have caused the test failure, not to impose fines and penalties. It is because of these features of WET testing, and the difficulties inherent in the implementation of a test that looks for impacts of unknown constituents on living organisms, that the use of numeric objectives and limitations based on WET testing in NPDES permits has been controversial for so long. It is also these underlying reasons why numeric objectives and limits for toxicity are unnecessary, inappropriate, and not well suited to the nature of the tests.

2. Mandating Use of the Test of Significant Toxicity (TST) in the Toxicity Provisions is Inappropriate, Particularly When Applied to the *Ceriodaphnia* Reproduction Endpoint

We continue to have significant concerns with incorporation of the Test of Significant Toxicity (TST) into the Toxicity Provisions for a variety of reasons. First, the TST has never been through a United States Environmental Protection Agency (USEPA) public review-and-comment rulemaking process, which is required when a new method is proposed for NPDES testing. A formal rulemaking must be conducted by the USEPA to incorporate the TST into the promulgated WET methods, before the TST can be required in California for purposes of measuring compliance in NPDES permits.

Other commenters have focused on the legality of using an unapproved method like the TST in this context, so our comments will not get into greater detail on that issue. To the extent that CASA's prior comment letters and the comments of other wastewater associations and entities address

components of the toxicity plan that relate to the imposition of numeric limits and use of the TST, we incorporate those comments by reference.

However, the practical issues associated with the TST as applied to certain freshwater species, notably the *Ceriodaphnia dubia* reproduction endpoint, are of primary concern to CASA. When USEPA first proposed approval for use of the *Ceriodaphnia dubia* reproduction endpoint in NPDES testing, there was litigation over the rule, and the court in the *Edison Electric* case ordered USEPA to amend the test method to include safeguards to protect against identifying non-toxic samples as toxic. USEPA's safeguards included a requirement to run multiple concentrations and look at the response to see if the results made sense. The safeguards also included application of variability criteria. The rationale for this safeguard is that a clearer understanding is gained with more information from running multiple dilutions (e.g. at 20-40-60-80-100% effluent), to see if a valid pattern of increasing effects with increasing concentrations is obtained. The TST as required in the Toxicity Provisions strips away USEPA's safeguards by only looking at 100% effluent (or the Instream Waste Concentration (IWC)). Finally, we have other significant concern with use of the TST in combination with the *Ceriodaphnia dubia* reproduction endpoint, which is discussed in greater detail below.

Core Implementation Concern

Eliminate or Modify the "Reproduction" Endpoint for the *Ceriodaphnia dubia* Chronic Freshwater Method Until Fundamental Testing Issues Are Resolved

CASA's primary and overriding concern is the continued use of the reproduction endpoint for the *Ceriodaphnia dubia* (water flea) chronic freshwater method. This species is the primary source of unacceptable testing variability, and will inevitably lead to increased instances of incorrect determinations of toxicity, and attendant violations, particularly when combined with numeric pass/fail limits and the use of the TST.

This endpoint is particularly troublesome for toxicity testing because the result is derived from counting how many offspring each water flea produces. In the absence of any other contributing factors, this figure can range from 15 to 45 offspring in a non-toxic control, resulting in a range whose upper bound is 300% higher than its lower bound. With such a high inherent variability among non-toxic control treatments, it is exceptionally difficult to reliably identify a 25% percent effect in the reproduction endpoint, which is the management decision currently identified in this draft of the Toxicity Provisions, and to determine the effect is caused by toxicity instead of natural variation.

Compounding this concern, use of the TST exacerbates the problem presented by use of the water flea because the TST strips away essential safeguards found in the promulgated test procedures, such as analyzing the data from multiple dilution tests. Although the Toxicity Provisions require that the dilution series be run, the information obtained from that important step cannot be used.

In addition, research conducted in this area by USEPA, the Southern California Coastal Water Research Project (SCCWRP), and the State Water Board has shown consistently that the high within-test variability associated with this reproduction endpoint results in a higher frequency of toxicity

detections when evaluated using the TST compared to the no observed effect concentration (NOEC), particularly when compared to those observed for the other species and endpoints. In light of these findings and scientific consensus about the limitations of the *Ceriodaphnia* reproduction endpoint, and in conjunction with currently available information suggesting that the other species and endpoints contained in Table 1 **(Toxicity Provisions at p. 6)** may be robust enough for application of the TST in a regulatory context, it is clear that the *Ceriodaphnia dubia* reproduction endpoint is simply not amenable to the TST statistical method.

In the peer-reviewed publication of the State Water Board/USEPA "Test Drive" study,[1] USEPA concluded that although the TST exhibited a similar or lower frequency of toxicity detections than the NOEC approach for most of the test endpoints examined when the mean effect was less than the 25% standard in the regulatory management decision (RMD), "the Ceriodaphnia reproduction… endpoints exhibited a somewhat opposite pattern (Table 1)." The authors further identified that the "chronic *Ceriodaphnia* reproduction endpoint yielded the largest number of tests declared toxic using the TST when the mean effect in the effluent was less than the toxic RMD of 25% (13 of 29 tests or 45%; Table 2)…the proportion of *Ceriodaphnia* tests having this outcome is approximately twice the proportion observed in the entire study (45 vs 23%, respectively)." Thus, while the Staff Report supporting the Toxicity Provisions frequently cites the Test Drive as evidence that the TST works and is reliable overall, the data within the Test Drive demonstrates that the *Ceriodaphnia dubia* reproduction endpoint does not follow that trend, is not reliable, and is in fact highly variable.

This observation was subsequently affirmed and corroborated in a SCCWRP-conducted interlaboratory comparison funded by the Stormwater Monitoring Coalition.[2] In this study, the TST resulted in incorrect determinations of toxicity for half (50%) of the non-toxic blank samples (laboratory dilution water) tested with *Ceriodaphnia dubia*. While recognizing that the reason for this observed toxicity has not been identified, the report recommended that future studies should "conduct the experimental manipulations to identify the source of this inter-laboratory variability" to "confirm this anomalous result." Absent that additional research, and in the light of the scientific unreliability of the *Ceriodaphnia dubia* reproduction endpoint, we think it is inappropriate for the Toxicity Provisions to include numeric toxicity limits based on this measure of toxicity with its unacceptably low precision.

Beyond the scientific literature, recent ambient testing by the Delta Regional Monitoring Program (Delta RMP) also experienced challenges with its *Ceriodaphnia dubia* chronic toxicity testing and data interpretation. Testing included ambient samples with conductivity outside of the organisms' tolerance range; therefore, secondary controls with low conductivity were also tested, as recommended by the Surface Water Ambient Monitoring Program (SWAMP) guidance.[3] Reproduction in these secondary controls was significantly lower than in the standard laboratory control in 14 of the 23 tests. These data suggest that water quality differences between samples or controls can contribute to the observed effects, and recent laboratory testing improved reproduction in low-conductivity laboratory control water with the addition of standard nutrients

[1] Environmental Toxicology and Chemistry, Vol. 32, No. 5, pp. 1101–1108, 2013
[2] SCCWRP Technical Report 956. December 2016. Stormwater Monitoring Coalition Toxicity Testing Laboratory Guidance Document. Kenneth C. Schiff and Darrin Greenstein, Southern California Coastal Water Research Project.
[3] https://www.waterboards.ca.gov/water_issues/programs/swamp/swamp_iq/toxicity.html

(i.e., biotin, sodium selenate, and vitamin B12). Additional monitoring and testing by the Delta RMP will be done to better understand this issue, but it is clear that *Ceriodaphnia dubia* are a sensitive test organism and their reproduction can reflect effects from constituents other than contaminants.

Attached to this letter is a comprehensive white paper that summarizes the findings above in greater detail and utilizes the data from the Test Drive and SCCWRP study to highlight the variability of the *Ceriodaphnia dubia* reproduction endpoint using the TST.[4] The purpose of the analysis in the white paper is to summarize the existing chronic toxicity *Ceriodaphnia dubia* reproduction test data from prior studies that were conducted on known non-toxic blank samples, and to assess whether the results are sufficient to resolve concerns regarding the variability of interlaboratory *Ceriodaphnia dubia* test results or whether additional testing is necessary and advisable to develop recommendations for reducing observed variability. While these studies have been somewhat limited in size, together they indicate a lack of confidence in the accuracy of the test results for the *Ceriodaphnia dubia* reproduction endpoint when the TST is used. Because of this problem, we believe that the *Ceriodaphnia dubia* reproduction endpoint should not be included as the basis for numeric limits in the Toxicity Provisions at this time.

As always, CASA is willing to partner with the State Water Board and others to work on resolution of these real issues going forward, including working together collaboratively on Toxicity Provisions that solve any real toxicity issues. CASA is also interested in exploring a partnered study with industry experts, the State Water Board, and other agencies including dischargers, to resolve the issues related to the *Ceriodaphnia dubia* reproduction endpoint. This study could be used to inform future use of this species as an indicator of toxicity, and to reduce test interferences.

However, any application of a regulatory limit associated with this species should not be considered until the problems identified by USEPA, SCCWRP, and others are addressed, and the solutions can be appropriately implemented. CASA and other stakeholders are in the process of developing an alternative approach to address this issue, and we look forward to working with State Water Board members and staff.

Additional Implementation Issues

1. The Provisions Should Clarify That Routine Acute Toxicity Testing is Not Generally Expected to Occur When Chronic Testing is Already Occurring

We appreciate that the Toxicity Provisions specify that Regional Water Quality Control Boards (Regional Boards) are not required to conduct a Reasonable Potential Analysis (RPA) for acute toxicity. Specifically, the provisions state that a RPA is "not required" for both categories of POTW dischargers, but that the Regional Boards "may require POTW dischargers to conduct a REASONABLE POTENTIAL analysis for acute toxicity" and shall document that decision in the NPDES fact sheet or equivalent document. **(Provisions at p. 14 / Staff Report at p. 16)**

[4] Larry Walker Associates, Inc. 2018. *Ceriodaphnia dubia* Short-term Chronic Reproduction Test: Understanding the Probability of Incorrect Determinations of Toxicity in Non-toxic Samples. White Paper prepared for California Association of Sanitation Agencies. November.

For POTWs, chronic toxicity testing is generally as protective of beneficial uses as both acute and chronic toxicity testing. From previous discussions with staff, it is our understanding that circumstances would be exceedingly rare where a Regional Board would require a POTW already subject to routine monitoring for chronic toxicity to also conduct acute testing. The Staff Report supports this understanding and makes clear that POTWs should only be required to run acute toxicity under limited circumstances, such as when there are very high dilution rates or where an adequate chronic toxicity test does not exist. The economic analysis supports this proposition as well, as the chronic testing cost analyses assume no acute testing is taking place and the cost estimates do not account for the costs of acute testing in its "sample" facilities analysis. (**See Table 9-1, Staff Report at Page 245**). However, we believe additional language must be added into the Toxicity Provisions themselves to reflect the conclusions in the Staff Report, and to delineate the anticipated circumstances where testing for both acute and chronic toxicity might be ordered by a Regional Board. Thus, we request additional language in the Toxicity Provisions to clarify that, in general, when chronic testing is being performed, acute testing is not simultaneously required. CASA and other stakeholders are in the process of developing language that reflects this approach, and we look forward to working with State Water Board staff on this issue.

2. The Provisions Should Clarify That Regional Boards Should Generally Reduce Monitoring Frequency During a Toxicity Reduction Evaluation (TRE)

We appreciate that the Toxicity Provisions specify that the Regional Boards may approve a temporary reduction in the frequency of routine monitoring for dischargers conducting a TRE. (**Provisions at p. 18, Staff Report at p. 96-97).** This approach makes sense as the discharger typically would perform extensive testing during a TRE that would make chronic testing for compliance purposes redundant. In addition, if there is an ongoing toxicity issue during the TRE, it does not make sense for a discharger to continue to receive routine monitoring compliance "fails" that could result in violations while it is simultaneously conducting the TRE, which is the only remedial measure available to potentially address the toxicity. Finally, as the Staff Report acknowledges, reducing routine monitoring while a discharger is conducting a TRE "allow[s] the discharger to concentrate resources on finding and eliminating the source of toxicity." **(Staff Report at p. 98)** Accordingly, we request additional language in the draft Toxicity Provisions themselves to clarify that, in general, Regional Boards and their staff should grant a temporary reduction in the frequency of routine monitoring for dischargers conducting a TRE. CASA and other stakeholders are in the process of developing language that reflects this approach, and we look forward to working with State Water Board staff on this issue.

3. The Provisions Should Clarify That Compliance Data Prior to Adoption of the Toxicity Plan Can be Used in Requests for Reduced Monitoring Frequency

We appreciate that the provisions include potential reduced routine monitoring schedules for chronic toxicity testing in specified circumstances. Specifically, the Toxicity Provisions allow the Regional Boards to approve a reduction in the frequency of routine monitoring when during the "prior five consecutive years" the MDEL and MMEL have not been exceeded and the toxicity provisions in the applicable NPDES permit have been followed. **(Provisions at p. 17)**

Unfortunately, the current language is written in such a way as to effectively prohibit consideration of positive compliance data gathered at any time before adoption of the new Toxicity Provisions. As noted above, while a specific reference is made to exceedances of the MDEL and MMEL, the MDEL and MMEL do not currently exist (and have not existed in previous years) in most permits, and therefore it would be impossible for agencies with existing, long records of positive compliance data and no prior toxicity issues to be granted a reduced monitoring frequency in the first five years after the Toxicity Provisions are implemented. We understand that this may be a drafting error and not necessarily the intent on the part of the Board to prohibit consideration of prior years' data, and we look forward to working with staff to develop language that addresses this issue.

4. The Provisions Should Address Implementation Issues Relating to the Number of Routine Monitoring Tests Conducted Within a Calendar Month

We appreciate that the Water Board has attempted to address the practical issues related to conducting multiple toxicity tests in a limited window with some of the changes to the Toxicity Provisions (e.g. allowing start dates to be varied among the regulated community and cross over months). Under this draft of the Toxicity Provisions, it still will be logistically difficult to comply in circumstances where an entity is required to conduct three (3) full tests within a calendar month. As has been acknowledged by State Water Board staff, initiating three tests within a thirty-day period is theoretically possible, but very difficult. Comments submitted by the Bay Area Clean Water Agencies (BACWA) provide additional detail regarding the logistics and difficulties of these tests, including one example where it may be impossible for an agency (SFPUC) to conduct three tests in a calendar month when there are wet-weather events. Thus, we concur with and reiterate BACWA's proposed amendments that would provide for an alternative approach to initiating three tests in a specified period.

5. The Economic Analysis Understates Actual Testing Costs, Fails to Account for Increased Costs Associated with Potential Acute Testing, and Fails to Account for the Increased Likelihood of Incorrect Determinations of Toxicity Resulting in Violations

CASA is concerned that the economic analysis contained in the Staff Report supporting the proposed Toxicity Provisions is inaccurate in several respects and thus understates the true costs of implementing these provisions. Specifically, the cost estimates **(Staff Report at pp. 241 – 249 and Table 9-1)** do not reflect the real costs of toxicity tests at contract laboratories. As articulated by BACWA in their written comments, POTWs in the Bay Area pay approximately $3,000 per sample, far above estimates in the economic analysis. In addition, the cost estimating methods do not include the costs of collecting and shipping samples to contract laboratories.

Also problematic, as noted above, is that the economic analysis references, but does not adequately articulate, the potential cost to dischargers if a Regional Board were to impose monthly acute toxicity routine monitoring requirements. The analysis notes this amount could be as much $9,468 per year, yet the "Potential Incremental Costs for Sample Facilities" table excludes the costs of acute testing entirely. If the State Water Board were to articulate in the provisions the relative rarity of the need for routine acute testing where chronic already taking place, as we suggest above, this estimation may be more defensible. However, as written, the economic analysis should at

minimum identify more accurate examples of what costs would be if Regional Boards were to impose acute testing requirements.

Finally, as articulated in greater detail by others in their written comments, the economic analysis entirely fails to account for the potential cost of increased violations from imposition of numeric limits and the TST. Staff has acknowledged that imposition of the Toxicity Provisions likely will lead to an increase in toxicity violations at wastewater facilities, yet nowhere in the economic analysis is the concomitant financial impact of such violations acknowledged or quantified. Both Regional Board enforcement actions and third-party lawsuits impose significant costs on local agencies, and these need to be estimated and articulated in the economic analysis.

We appreciate the opportunity to comment and look forward to discussing these issues with you in early 2019. If you have any questions or concerns, please do not hesitate to reach out to me directly at (916) 446-0388 or alink@casaweb.org. Thank you.

Adam D. Link
Director of Operations

cc: Karen Mogus, SWRCB
Rebecca Fitzgerald, SWRCB
Zane Poulson, SWRCB