February 8, 2023

TO: Hajer Dawoody and Emma McCorkle
Water Quality Standards
Colorado River Basin Regional Water Quality Control Board

RE: Establishment of Salton Sea TMDLs in 2023

To Ms. Hajer Dawoody and Ms. Emma McCorkle,

The Salton Sea Environmental Timeseries (SSET) welcomes the opportunity to comment on the proposed total maximum daily load (TMDL) for the Salton Sea. SSET is a team of community members (with scientific and non- scientific careers) and non-local scientists developing a water monitoring program to collect information on the Salton Sea that directly responds to the concerns of Eastern Coachella Valley (ECV) communities and making this information accessible and utilizable by those communities via https://saltonseascience.org. SSET, a project of Alianza Coachella Valley, began in 2021 in the absence of government environmental monitoring. We support the proposed TMDLs for the Salton Sea and highlight the urgent need to implement remediation measures.

In accordance with the Clean Water Act, we encourage the state to develop Salton Sea TMDLs and to resume water quality monitoring and restoration efforts. Since the Salton Sea is classified as a 303(d) listed impaired body of water by both the US EPA and the California State Water Resources Control Board, TDMLs need to be developed and implemented as soon as possible. Our comments below focus on the need to include robust public participation in preparing the technical report, the importance of prioritizing near-shore communities when surveying the Salton Sea, the necessity of on-going water quality monitoring, and the urgency of implementing remediation measures that address TMDLs.

1. The proposed TMDLs have the potential to profoundly improve quality of life in the regions surrounding the Salton Sea. For this reason, it is important that public health and CEQA factors including air quality be considered as compelling reasons for urgent implementation of a TMDL. The high nutrient load and consequent anoxic conditions of

the Salton Sea result in production of hydrogen sulfide.[1] Chronic exposure to hydrogen sulfide has been shown to have negative health effects.[2] Given these and other health impacts, we recommend that public participation throughout the TMDL process is prioritized.

a. We request that the state disclose a comprehensive list of the nutrients to be tested in order to determine or forecast environmental hazards such as algal blooms. High concentration of nutrients such as nitrate and phosphate have been proven to contribute to the algal blooms that eventually die, are decomposed by bacteria at the bottom of the lake, and contribute to the anoxic environment not suitable for aquatic life. Beyond nitrate, phosphate and micronutrients such as iron may also be important contributing factors to the plankton blooms. In addition, we suggest that at minimum the discrete sampling in the Salton Sea should encompass all pollutants currently listed on the 303(d) list for the Coachella Valley Stormwater Drain (which will be referred to here as the Whitewater River), New River, and the Alamo River.
b. The region 7 water board's sampling should include a site in the main body of the Salton Sea outside of where the Species Conservation Habitat (SCH) project water exchanges and where the New River meets the Sea.
c. Public inclusion in developing the technical report may reveal other pollutants of concern to the surrounding communities. The lithium extraction process may introduce new pollutants and is of great interest for regional residents. Please include a mention of potential contaminants introduced from lithium extraction to address the community requests.
d. There is substantial public interest in improving water quality, as evidenced from the enthusiastic participation in our water quality program. We request that community science participants in programs including SSET be included in the scientific review process.

2. We recommend that the state be strategic in deciding where they will conduct water quality monitoring to determine the specific sources of contamination. We would like to emphasize that near-shore areas should be included in the survey of the Salton Sea used to establish the TMDLs and remediation plans. These areas are nearest to human populations and can have high enough biological production and stratification to result in anoxic conditions even in fairly shallow water (Table 1). From June 2021 to February 2023, SSET sampled water quality at stations at the north end of the Salton Sea using a

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[1] Holdren, G. C., & Montaño, A. (2002). Chemical and physical characteristics of the Salton Sea, California. In D. A. Barnum, J. F. Elder, D. Stephens, & M. Friend (Eds.), The Salton Sea (pp. 1–21). Springer Netherlands. https://doi.org/10.1007/978-94-017-3459-2_1
Ma, J., Duan, H., He, L., Tiffany, M., Cao, Z., Qi, T., Shen, M., Biggs, T., & Xu, X. (2020). Spatiotemporal pattern of gypsum blooms in the Salton Sea, California, during 2000-2018. International Journal of Applied Earth Observation and Geoinformation, 89, 102090. https://doi.org/10.1016/j.jag.2020.102090
Tiffany, M. A., González, M. R., Swan, B. K., Reifel, K. M., Watts, J. M., & Hurlbert, S. H. (2007). Phytoplankton dynamics in the Salton Sea, California, 1997–1999. Lake and Reservoir Management, 23(5), 582–605. https://doi.org/10.1080/07438140709354039

[2] Legator, M. S., Singleton, C. R., Morris, D. L., & Philips, D. L. (2001). Health effects from chronic low-level exposure to hydrogen sulfide. *Archives of Environmental Health*, *56*(2), 123–131. https://doi.org/10.1080/00039890109604063.

YSI Pro DSS, a YSI photometer 9500, and bacterial indicators using the IDEXX Quanti-Tray system for Enterolert and Colilert. All data is available on our website (https://saltonseascience.org/dashboard/water-quality). Our data has shown consistent high levels of nitrate in near-shore areas. Within 4 km from the outflow from the Whitewater river, the surface nitrate concentrations range from 0.14 mg/L N to 9.75 mg/L N (Figure 1). There is a continuous algal bloom at the mouth of the Whitewater River. This was noted to be persistent between June 2021 and December 2022 through our own water quality monitoring and is correlated with nitrate concentrations (Figure 2). This is probably the case for other rivers that drain into the Salton Sea. We suggest near-shore locations be selected to conduct water quality monitoring, in addition to deep-water monitoring locations (Figure 3). As a result of the current conditions, even in the shallow near-shore water, the dissolved oxygen concentrations are below the TMDL for warm water habitats (Table 1).

3. We recommend that the state seeks more funding for water quality monitoring beyond the three years that their current funding source allows. The board can seek more funding from other agencies such as the Bureau of Reclamation, which has conducted water quality monitoring before. Without intervention for more water to be allocated to the sea or mitigation of pollution of the water flowing into the sea, water quality conditions will continue to deteriorate. Shoreline communities are increasingly concerned about what the water conditions at the sea mean for public health in the region. As it is, the sea cannot sustain aquatic life due to the inadequate amount of oxygen (Figure 4).

Thank you for your time and consideration. We hope the state, regional, and CalEPA takes into account our recommendations outlined above, that we receive some follow up, and that next steps are clearly communicated for the benefit of the community. Please do not hesitate to contact Aydee Palomino from Alianza Coachella Valley, aydee@alianzacv.org, if you have any questions, comments, or requests for further discussion.

Best,
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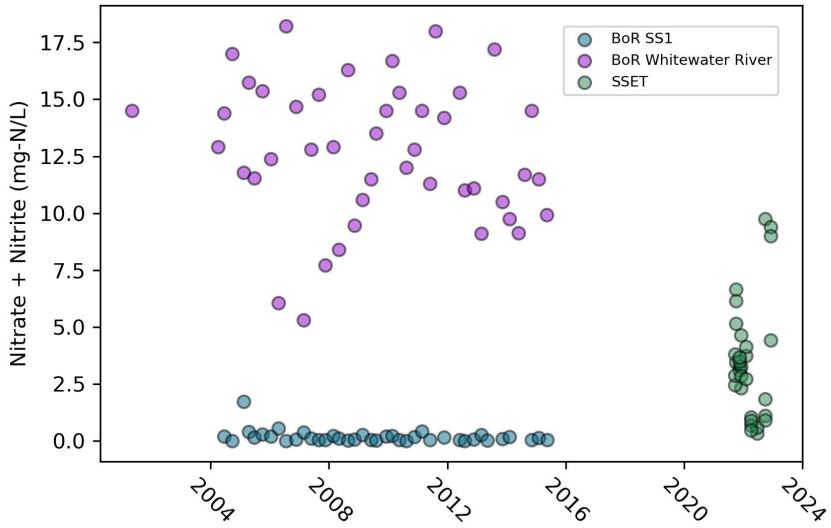

Figure 1. Nitrate + Nitrite (mg-N/L) concentrations in the Salton Sea from stations monitored by the Bureau of Reclamation (BoR) and the Salton Sea Environmental Timeseries (SSET). The BoR data were taken at their BOR-SS1 (33.4ºN 115.9ºW) and Whitewater River (33.5ºN, 116.1ºW) locations. SSET data stems from the transect indicated in Figure 3.

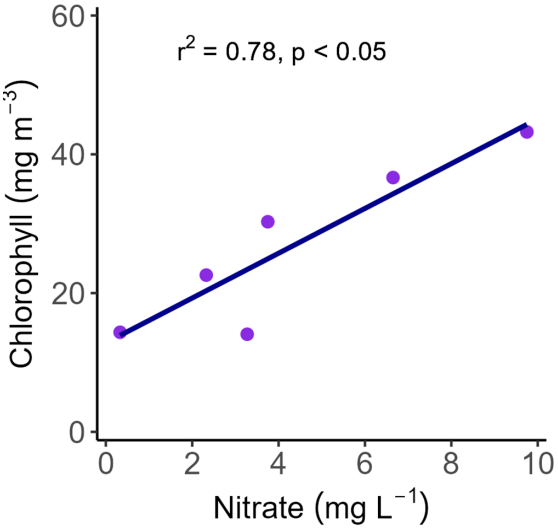

Figure 2. Nitrate concentration (mg/L N) measured in the field using a YSI photometer and chlorophyll concentration (mg/m^3) measured using a YSI Pro DSS probe at SS1 (33.4713 N, 116.0262 W). Each data point is from a different date (9/18/2021, 12/4/2021, 2/5/2022, 4/9/2022, 6/21/2022, 10/1/2022).

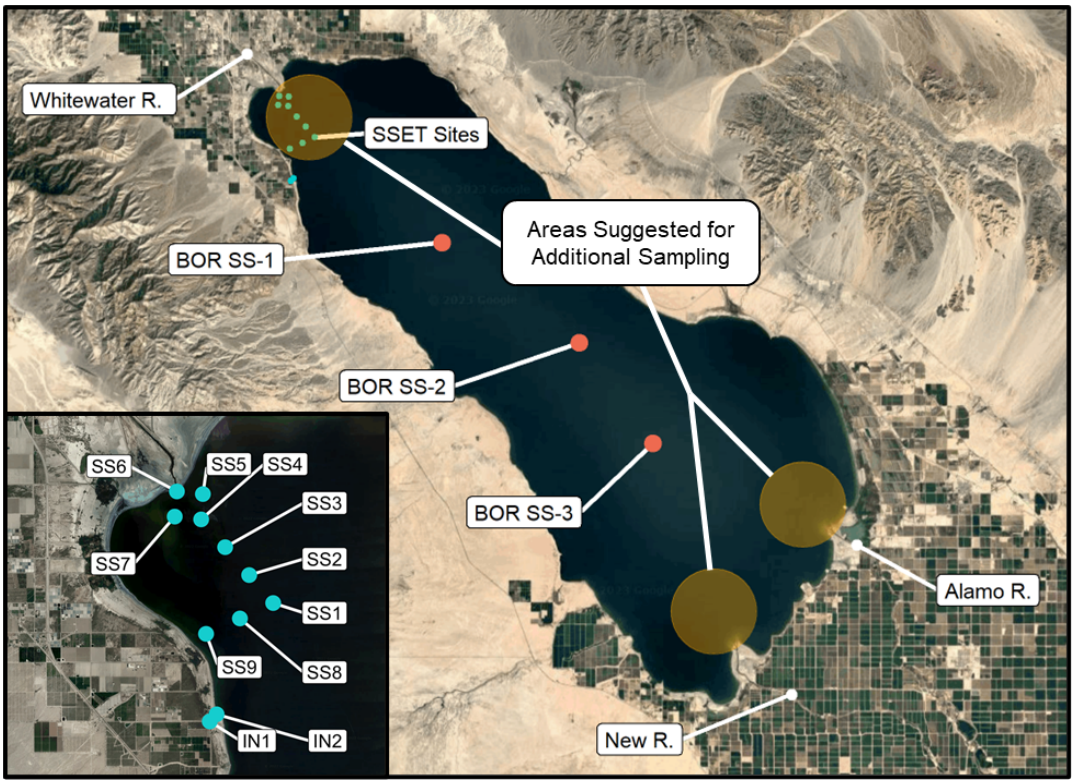

Figure 3. A map showing SSET sampling locations (blue), previous BOR sampling locations (red), river inputs to the lake (white), and areas suggested for additional sampling (orange).

Table 1. Observations from SSET collected with a YSI Pro DSS probe. Observations were collected every 0.5 m. The minimum depth where dissolved oxygen below 5 mg/L was recorded is shown in the table below. Sites and dates where dissolved oxygen below 5 mg/L were not recorded are not shown in this table.

Site code	Coordinates	Date	Depth below 5 mg/L (m)
ss2	33.4769 N, 116.0325 W	10/23/2021	6
ss1	33.4713 N, 116.0262 W	11/13/2021	4.5
ss2	33.4769 N, 116.0325 W	11/13/2021	3.5
ss3	33.4835 N, 116.0398 W	11/13/2021	2.5
ss4	33.4902 N, 116.04651 W	11/13/2021	0.5
ss5	33.4964 N,116.0462 W	11/13/2021	0.5
ss8	33.4664 N, 116.0364 W	11/13/2021	3.5
ss1	33.4713 N, 116.0262 W	12/4/2021	4.5
ss2	33.4769 N, 116.0325 W	12/4/2021	4.5

ss3	33.4835 N, 116.0398 W	12/4/2021	4
ss9	33.4606 N, 116.0450 W	6/21/2022	2
ss8	33.4664 N, 116.0364 W	6/21/2022	2
ss1	33.4713 N, 116.0262 W	6/21/2022	2.5
ss2	33.4769 N, 116.0325 W	6/21/2022	2.5
ss3	33.4835 N, 116.0398 W	6/21/2022	2
ss4	33.4902 N, 116.04651 W	6/21/2022	1
ss5	33.4964 N,116.0462 W	6/21/2022	0.5
ss6	33.4951 N, 116.0533 W	6/21/2022	0.6
ss7	33.4906 N, 116.0544 W	6/21/2022	0.5
BOR1	33.4286 N, -115.9411 W	6/21/2022	1.5
ss1	33.4713 N, 116.0262 W	10/1/2022	4.5

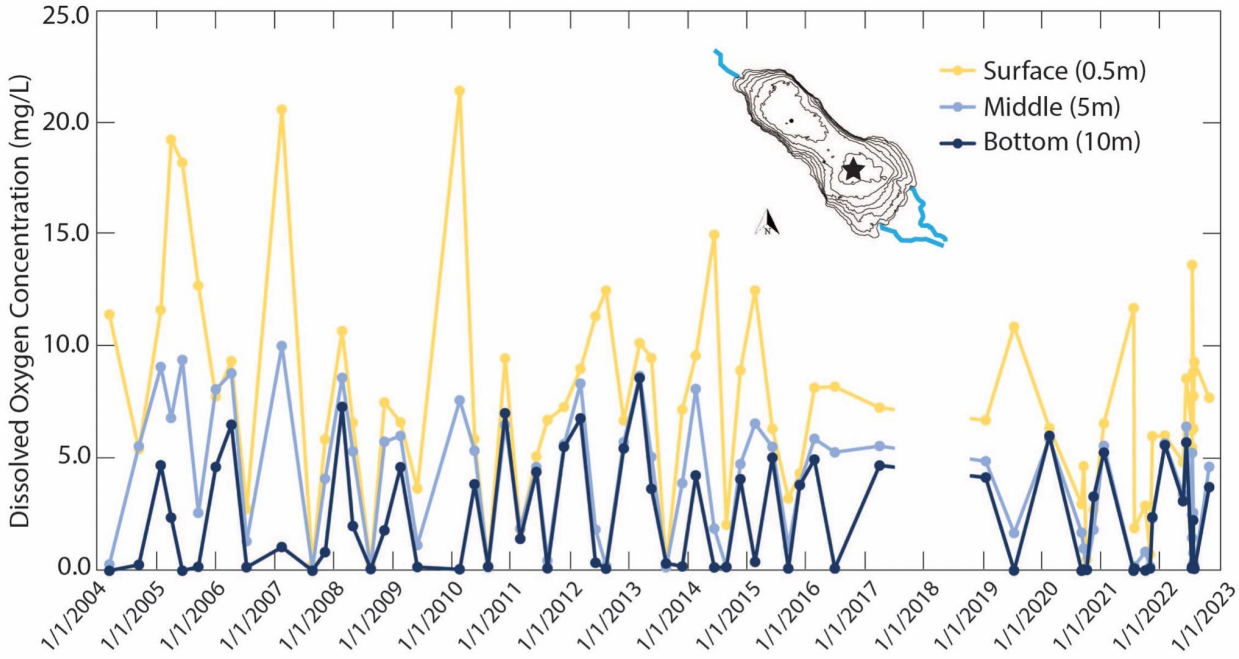

Figure 4. Dissolved oxygen levels in the Salton Sea from 2004 to 2022 to show water quality decline accompanied by consistent nutrient loading and accumulation. Water was sampled from three depths, surface (0.5 m), middle (5m), and bottom (10m), at the deepest location of the southern portion of the lake indicated by the star symbol in the figure subset. Data were collected by the Bureau of Reclamation(2004-2020) and Lyons Lab efforts (2020-2022).