Heal the Bay

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January 25, 2013

Cindy Lin
U.S. Environmental Protection Agency
Southern California Field Office
600 Wilshire Blvd., Suite 1460
Los Angeles, CA 90017

Via email: lin.cindy@epa.gov

RE: Comments on the Draft Total Maximum Daily Loads (TMDLs) for Sedimentation and Nutrients to address Benthic Community Impairments in Malibu Creek and Lagoon

Dear Dr. Lin:

On behalf of Heal the Bay, a non-profit environmental organization with over 12,000 members dedicated to making the Santa Monica Bay and Southern California coastal waters and watersheds safe and healthy for people and local ecosystems, we submit the following comments on the Draft Total Maximum Daily Loads (TMDLs) for Sedimentation and Nutrients to address Benthic Community Impairments in Malibu Creek and Lagoon ("Draft TMDL" or "TMDL").

Heal the Bay has been actively working in the Malibu Creek Watershed since 1998. During this period we have collected extensive data showing that Malibu Creek and many of its tributaries are impaired for numerous parameters including benthic macroinvertebrates and greatly in need of protection and improvement. Heal the Bay's Stream Team has collected high quality water quality data since 1998 and continues in this effort today. Our data show trends of high levels of nutrients as well as extensive algal cover, creating a poor environment for aquatic life. Further, we find that benthic macroinvertebrate communities are impaired, particularly in areas impacted by development. Given the degradation in Malibu Creek, Lagoon, and tributaries, it is imperative that nutrient levels and sedimentation are lowered in order to improve the biological communities and maintain a healthy watershed. We are supportive of this TMDL in its efforts to reduce nutrient levels and sedimentation to improve the biological community.

We strongly support the proposed nutrient limits for total nitrogen (TN) and phosphorus (TP) and reduction in sedimentation. However, we are concerned that an alternative limit for TP in areas draining the Modelo formation will lead to further degradation and impairment in downstream areas and urge EPA to remove this limit. We also urge EPA to strengthen targets for benthic community health that are proposed for Malibu Creek and Lagoon. The targets for benthic macroinvertebrate community should be similar to what is found in reference sites, and we propose a target SC-IBI score of 60. Further, we also would like a higher target set for a healthy benthic community in Malibu Lagoon. The current target of 35 species in 15 years is too low. Similar estuaries in the area have higher species richness. We propose a target of 42 species in 15 years, which incorporates an additional margin of safety. Because the IBI and a

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single species number do not take into account invasive species, we would like an additional numeric target to be included that addresses invasive species. A healthy benthic community will be free of invasive species. We propose the inclusion of a WLA/LA of zero invasive exotic species. These comments and others are described in more detail below.

1. **There is a clear need to lower total nitrogen concentrations in-stream based on high algal cover in Malibu Creek, Lagoon, and tributaries as well as low nitrogen levels in reference sites. The limits for total nitrogen set in the 2003 EPA nutrient TMDL for Malibu Creek Watershed are not being met consistently and do not represent background levels as claimed in the 2003 TMDL. Even in areas where the limits are being met, we see algal impairment. We support the proposed total nitrogen levels in the current draft TMDL of 0.6 mg/L in the summer and 1.0 mg/L in the winter.**

   Algal cover is a clear problem in Malibu Creek and its tributaries. Algal growth is promoted by excess nutrients, which are contributed by urban runoff, agriculture, and wastewater discharge. From 2000 to 2004, Heal the Bay staff and volunteers surveyed and mapped algae along 70 miles of stream in the watershed. Heal the Bay's Stream Team also measures algal cover monthly at 12 sites in the Santa Monica Mountains (from 1998-current). We find evidence of high levels of algae in Malibu Creek and tributaries. Specifically, a survey in Malibu Creek with seasonal follow-up surveys from 2000-2004 revealed that 69% of Malibu Creek had greater than 50% algal cover (of 9.8 miles mapped). The monthly data show that benthic algal cover is lowest at our reference sites (upstream of development and downstream of open space) and highest at outlet sites (downstream of development and point sources). Using the Regional Board threshold for algal nuisance of 30% algal cover over 10% of the time[1], we find that all our outlet, middle watershed, and over 80% of our reference sites are impacted by algae. Using a more conservative threshold of 50% algal cover for over 50% of the time, we find that no reference sites are impacted, over 40% of middle sites are impacted, and over 60% of outlet sites are impacted.

   Heal the Bay studied threshold values for nutrients and algal cover in Malibu Creek using an empirical reference site approach and found that "[p]eriphyton cover exceeded nuisance levels (i.e. 30% cover) whenever average nitrate concentration was greater than 0.1 mg/l or average phosphate concentration was greater than about 0.15 mg/l." [2] Heal the Bay's Stream Team has also monitored nutrient levels monthly since 1998. Examining data from 1998-2010, we find that our eight reference sites had an average dry season nitrate concentration of 0.06 mg/L and wet season concentration of 0.09 mg/L. These values are much lower than the 2003 TMDL limits of 1.0 mg/L Total Nitrogen (TN) in the summer and 8.0 mg/L TN in the winter. We do acknowledge that we measure only inorganic nitrogen as nitrate and that TN levels will be higher, however,

[1] USEPA (United States Environmental Protection Agency). 2003. Total Maximum Daily Loads for Nutrients Malibu Creek Watershed. U.S. Environmental Protection Agency, Region 9, San Francisco, CA. http://www.epa.gov/region9/water/tmdl/malibu/final_nutrients.pdf .

[2] Luce, S. & Abramson, M. 2005. Periphyton and Nutrients in Malibu Creek. A Heal the Bay Report: available from Heal the Bay.

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still likely much lower than the TN WLAs from the 2003 Nutrient TMDL, particularly the winter levels. At our seven outlet sites, we find that the average dry season nitrate concentration was 1.21 mg/L and 2.29 mg/L in the winter. Nutrient levels are clearly elevated in the middle and lower watershed due to inputs from development, stormwater, and discharge from Tapia Water Reclamation Facility in the winter. Many sites that we monitor do not meet the 2003 TN limits, which is not a big surprise given the lack of TMDL implementation efforts. Because we monitor nitrate and not TN, the exceedance rates are conservative and most likely, higher. We find that nitrogen levels are not being met in Malibu Creek main stem and tributaries up to 100% of the time (data from 1998-2010). Las Virgenes Creek tributary has especially high exceedance rates in the dry season. We see variation in exceedances of nitrogen at different sites but we consistently see high levels of algae throughout the watershed. Further, some sites that we monitor never exceed the 2003 TN TMDL limits in the dry and wet seasons, yet still show high algal cover. For instance, based on our monthly data from 1998-2010, Site 12 in upper Malibu Creek and Site 17 in Triunfo Creek never exceeded nitrate levels of 1.0 mg/L in the dry season or 8.0 mg/L in the wet season. However, Site 12 had an average of 85% benthic algal cover in the dry season and 70% cover in the wet season. Site 17 averaged 68% benthic algal coverage in the dry season and 46% in the west season. Both sites had less than 10% floating algal cover in all seasons. Despite being in compliance with the 2003 TMDL nitrogen limits, there is still an algal problem, indicating that the current nutrient levels are too high and need to be lowered.

In addition to data collected by Heal the Bay, other scientific studies show that very low levels of nutrients are necessary to protect aquatic life, providing further justification for the proposed lower TN limits. The targets for nitrogen in the 2003 Malibu Creek Watershed Nutrients TMDL are inadequate to protect aquatic life. For instance, USEPA recommends CWA section 304(a) nutrient criteria specific to the Los Angeles Region (Ecoregion III) of 0.38 mg/l total nitrogen and 0.022 mg/l total phosphorus for protection of aquatic life and recreation uses. [3] Dodds and Welch (2000)[4] propose threshold values of 1.5 mg/L TN and 0.075 mg/L TP to distinguish between streams that are mesotrophic and those that are eutrophic. This implies that levels lower than 1.5 mg/L TN and 0.075 mg/L P are necessary to prevent excessive algal growth and conditions that are detrimental to aquatic life, such as low levels of dissolved oxygen and poor habitat. The proposed TN levels of 0.6 mg/L in the summer and 1.0 mg/L in the winter will promote conditions that are protective of aquatic life and beneficial uses.

[3] USEPA, Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III (2000) (EPA 822-B-00-016).

[4] Dodds, W.K. & Welch, E.G. 2000. Establishing nutrient criteria in streams. *Journal of the North American Benthological Society* 19: 186-196.

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2. **We support the proposed Total Phosphorous (TP) limit of 0.1 mg/L throughout the year. We urge caution in the proposed alternative limit for TP in areas draining the Modelo formation.**

   Low concentrations of TP can contribute to algal cover and algal nuisance. Levels much lower than 0.1 mg/L are known to impact stream algal levels. As described in the previous section, USEPA recommends a level of 0.022 mg/L total phosphorus for protection of aquatic life and recreation uses [5] and Dodds and Welch (2000)[6] propose a threshold value of 0.075 mg/L TP for eutrophic conditions. The proposed limit for TP is already above a level that may promote algal growth and we are concerned that any additional relaxation of this limit will lead to further degradation and high algal cover in those areas. We acknowledge that for sites draining the Modelo formation, there are some natural sources of phosphate but we urge extreme caution in creating an alternative limit for these sites specifically. In addition, we are concerned about impacts to all downstream sites that are not necessarily in the Modelo formation. What does the EPA plan to do to ensure that WLAs are met in downstream reaches with lower limits?

3. **We urge EPA to strengthen numeric targets for benthic community health for Malibu Creek, Lagoon, and tributaries and include an additional numeric target of zero for invasive species.**

   The biological targets that are set in the TMDL are too low and will not promote a high quality benthic community. The proposed SC-IBI score of a median of 40 or better over 4 years only requires that streams be in "fair" condition. Because the TMDL took a reference-based approach to setting nutrient limits, we believe that a similar approach should be taken to set biological numeric targets. Heal the Bay's data on SC-IBI scores shows that the average score of our six reference sites is 62, in the "good" range. If we are more conservative and take the average median score of the reference site data used by EPA in Figure 8-3 of the TMDL, we get a similar score of 59. Thus, we recommend a numeric limit of 60 for a target SC-IBI score. Reference sites in and near the watershed have healthy biological communities and all sites should be put on track for attaining the same biological community structure.

   We also urge EPA to increase the species target for the Malibu Lagoon. While there is not one perfectly comparable reference lagoon, we do see some similar lagoons in southern California that have higher species numbers and Malibu should be no exception. For instance, Tijuana Estuary in Imperial Beach, CA has 133 species of invertebrates[7], and Mugu Lagoon in Ventura

[5] USEPA, Ambient Water Quality Criteria Recommendations: Rivers and Streams in Nutrient Ecoregion III (2000) (EPA 822-B-00-016).

[6] Dodds, W.K. & Welch, E.G. 2000. Establishing nutrient criteria in streams. *Journal of the North American Benthological Society* 19: 186-196.

[7] Zedler, J.B. et al. 1992. The ecology of Tijuana Estuary, California: a National Estuarine Research Reserve. NOAA Office of Coastal Resource Management, Washington, D.C.

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county has 43 - 46 species of benthic macroinvertebrates [8, 9]. Even some smaller estuaries that are highly impacted are able to maintain high species diversity such as San Dieguito estuary[10] and Agua Hedionda [11] with 42 and 76-143 species of benthic macroinvertebrates, respectively. Especially given the comprehensive restoration of Malibu Lagoon, we should set our biological target higher than proposed for the Lagoon. Therefore, based on species numbers from similar estuaries and an additional margin of safety of 20%, we propose a target of 42 benthic macroinvertebrate species in 15 years in Malibu Lagoon.

While we support EPA's decision to include a species diversity target, we are concerned that the critical issue of species composition and whether a species is native or non-native remains unaddressed in the proposed TMDL. We hope that the Lagoon will be home to a functionally and taxonomically diverse suite of *native* species and not just contain 35 species of any type. The SC-IBI score also does not take into account whether species are native or invasive. To avoid a situation where Malibu creek or Lagoon meets its biological target number but is dominated by invasive species, we request that an additional numeric target be included that addresses invasive species. A healthy benthic community will be free of invasive species, and we propose the inclusion of a WLA/LA of zero for invasive exotic species. A precedent for setting a numeric target for invasive species comes from the Ballona Creek Wetlands TMDL, where a target of zero was set for highly or moderately invasive vegetation and a target of 10% cover was set for vegetation rated as "low" in terms of invasiveness. [12] The Malibu Creek Watershed is known to contain two highly invasive benthic macroinvertebrate species, the New Zealand mudsnail and the red swamp crayfish. In order to promote healthy benthic biological communities, we must keep invasive species out and set a strong target of zero invasive aquatic benthic macroinvertebrate species.

4. The reference sites used in the TMDL analyses provide a good indication of background levels and are the best available.

We support the sites that were chosen and used by EPA in establishing reference or background levels for nutrient concentrations as well as for comparisons of benthic communities. It is important to select reference sites that are not impacted by development or urbanization. Further, is also important to select sites that may have natural sources of nutrients. EPA succeeded in both of these tasks. Two sites were used as reference that are clearly in the Modelo geologic formation and which are affected by natural sources of phosphate and other inputs, Las Virgenes Creek

[8] Onuf, C.P. 1987. The ecology of Mugu Lagoon, California: an estuarine profile. U.S. Fish and Wildlife Service Biological Reports 85 (7.15), Washington, D.C.
[9] Peterson, C.H. 1975. Stability of species and of community for the benthos of two lagoons. *Ecology* 56: 958-965.
[10] http://ceres.ca.gov/wetlands/geo_info/so_cal/san_dieguito.html
[11] http://ceres.ca.gov/wetlands/geo_info/so_cal/agua_hedionda.html
[12] USEPA. 2012. Ballona Creek Wetlands Total Maximum Daily Loads fir Sediment and Invasive Exotic Vegetation. U.S. Environmental Protection Agency, Region 9, San Francisco, CA. http://www.epa.gov/region9/water/tmdl/ballona/BallonaCreekWetlandsTMDL-final.pdf

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(LV-9) and upper Cheeseboro Creek (CH-6). Both these sites are also upstream of developed areas and primarily drain open space. Heal the Bay monitors these sites and we find the biological communities to be healthy, despite being in the Modelo formation. Site CH-6 has a median SC-IBI score of 54, while site LV-9 has a median SC-IBI score of 41. This puts both sites in the "fair" range. While slightly lower than our other reference sites, these scores do not indicate severe impacts of the Modelo formation on biological communities. Their biological similarity with other reference sites (as shown in TMDL Figure 8-3) and clear distinction from main stem sites, indicates that they are good reference sites and that good biology is attainable even in sites draining the Modelo formation.

5. Additional Concerns

Sediment Load Reduction

We are supportive of reducing sediment loads in Malibu Creek and tributaries to benefit aquatic life. In the TMDL, it is unclear whether a 38% reduction in sediment will truly result in meeting benthic community targets. Does meeting this target result in attainment of natural (pre-development) sediment yield? EPA should provide more support for this targeted reduction. Further, a potential contributor to sediment loading is from construction projects, which should be addressed in the TMDL and given a WLA.

Onsite Wastewater Treatment Systems (Septics)

In general, we are supportive of nutrient load allocations for septic systems of 2.49 mg/L summer and 6.75 mg/L winter TN and 0.99 mg/L TP. While nutrient reduction to this level may not be feasible prior to leachfield dispersal given the technological constraints of current advanced treatment systems, treatment that occurs in the vadose zone, plus the fact that these allocations are in-stream targets add to the feasibility of meeting these limits.

The State Water Resources Control Board's recently adopted Water Quality Control Policy for Siting, Design, Operation, and Maintenance of Onsite Wastewater Treatment Systems (OWTS Policy) requires the Regional Board to adopt a TMDL implementation plan for Malibu Creek before 2016 (OWTS Policy Attachment 2 Page 49). USEPA should help shape this plan by providing more detail through its implementation recommendations in the TMDL. The recommendations should be even more stringent than those outlined in Tier 3 of the OWTS Policy. For instance, EPA should recommend a sanitary survey to count, identify, map, and assess the condition of septic systems within 600 feet of Malibu Creek and its tributaries. Existing monitoring data and observations, such as that collected by Sikich et al. (2013)[13] can be used to

[13] Sikich, S., Pease, K., Diringer, S., Abramson, M., Gold, M., & Luce, S. 2013. Malibu Creek Watershed: An Ecosystem on the Brink. Heal the Bay, Santa Monica, CA, in press.

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aid in this effort. Clusters of septic systems that do not utilize advanced treatment may be identified to aid in the implementation of the TMDL. All new and replaced systems within 600 feet of Malibu Creek and its tributaries should be required to include advanced treatment to a reduction of 15 mg/L of nitrogen in effluent, and meet the other supplemental treatment requirements of the Septic Policy, effective immediately after adoption of the TMDL. The TMDL should also recommend a schedule that requires compliance with the load allocations as soon as practicable, given the watershed-specific circumstances.

TMDL and Stormwater Permit (MS4) Recommendation

We recommend that EPA and the Regional Board work to ensure that the nutrient limits in this TMDL apply in the compliance determination of the MS4 permit for the Malibu Creek Nutrient TMDL, which states "For the Malibu Creek Nutrient TMDL established by USEPA in 2003, in no case shall the time schedule to achieve the final numeric WLAs exceed five years from the effective date of this Order."

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In summary, we strongly support the proposed limits for nutrients to address high levels of algal cover and impaired benthic macroinvertebrate communities in the Malibu Creek Watershed. We support reduction in sedimentation to natural background levels as well to promote suitable habitat for benthic macroinvertebrates. The TMDL makes clear links between excess nutrients, sedimentation, and biological impairments. Natural sources are clearly not a major cause of biological impairment since we document healthy benthic communities in areas that are in the Modelo formation and are undeveloped.

We urge EPA to establish higher numeric targets for biological health of Malibu Creek, its tributaries, and Malibu Lagoon. The reference condition approach was taken to establish nutrient and sediment limits, and we urge EPA to also use reference sites to establish higher biological targets. We also request the inclusion of a numeric target of zero for invasive aquatic species. Strict nutrient and sediment inputs to the Malibu Creek Watershed along with high numeric targets for biological communities will help to fully restore the beneficial uses of the Malibu Creek Watershed.

Sincerely,

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