



September 10, 2010

Charles Hoppin, Chair and Members
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814
c/o Jeanine Townsend, Clerk to the Board

VIA ELECTRONIC MAIL: commentletters@waterboards.ca.gov

Re: Comment Letter – California Ocean Plan

Dear Chair Hoppin and Board Members:

On behalf of the California Coastkeeper Alliance, which represents 12 Waterkeeper organizations spanning the coast from the Oregon border to San Diego, and the Center for Biological Diversity, we welcome this opportunity to provide comments regarding potential revisions to the California Ocean Plan (Ocean Plan). Given that the most recent Ocean Plan Triennial Review and Workplan is dated November 2005,¹ this solicitation is critical to ensuring the health and vitality of California's coastal and marine ecosystems. As an overarching comment, we urge the State Water Resources Control Board (Water Board or SWRCB) to review, update and re-issue the Ocean Plan Workplan as a whole for the coming three years, so that staff members have clear direction on both priorities and pending issues for action, and so that progress may be tracked against such identified action areas.

In light of the remaining list of Issues to be addressed from the current Workplan, we incorporate by reference and attach our joint comments dated July 19, 2007² to this letter. From the issues raised in our 2007 letter, we particularly urge the Water Board to **delete the exclusion for vessel wastes and insert new language to reflect current state and federal requirements for regulating discharges from vessels**. These requirements have changed *significantly*³ since

¹ California Ocean Plan Triennial Review and Workplan 2005-2008 (Nov. 16, 2005), available at: http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oplans/coptrirev20052008.pdf.

² Letter from Heal the Bay, California Coastkeeper Alliance and Defenders of Wildlife to SWRCB, "Comments on the Amendments to the California Ocean Plan Scoping Document" (July 19, 2007) (attached to these comments).

³ See, e.g., SWRCB, "SB 771: California Clean Coast Act of 2005 – Vessel Discharges," http://www.waterboards.ca.gov/water_issues/programs/npdes/sb771.shtml; U.S. EPA, "Vessel Discharges," <http://water.epa.gov/aboutow/owow/programs/vesseldisch.cfm>; California State Lands Commission, "Marine Invasive Species Program," http://www.slc.ca.gov/Spec_Pub/MFD/Ballast_Water/Ballast_Water_Default.html, and "California's Marine Invasive Species Program" presentation to the California Water Quality Monitoring Council (Aug. 11, 2010), available at: http://www.waterboards.ca.gov/mywaterquality/monitoring_council/meetings/2010aug/falkner_ballast.pdf.

the vessel waste deletion was inserted into the Ocean Plan. Vessel waste management through the Ocean Plan in fact is an issue that has been repeatedly raised by environmental groups since 1998,⁴ and it is more than ripe for action.

It is our understanding that the Water Board is working on another issue raised in our 2007 Letter, this with respect to controlling the impacts of current and proposed **ocean desalination facilities and brine disposal** (2005 Workplan Issue 10).⁵ It is also our understanding that the Water Board is developing a Trash Policy, which we hope will address our 2007 comment on **Plastic Debris Regulation** (2005 Workplan Issue 23) that “zero trash discharge is the only fair interpretation of the water quality standards that will guarantee protection of the beneficial uses of the ocean environment with an appropriate margin of safety.” We would welcome an update on these efforts as part of the staff presentation to the Water Board at the September 22, 2010 hearing, so that the public may be able to provide informed comments as to the current direction of these important efforts.

In addition to the above issues, we urge the Water Board to incorporate into the Ocean Plan new provisions devoted to addressing the **current and projected impacts of climate change** in our ocean waters. Since the adoption of the current Ocean Plan Workplan five years ago, the extent of and certainty with which climate change impacts are affecting the ocean environment have grown considerably. Scientific analysis and modeling of such impacts as ocean acidification, warming, and sea level rise are increasingly being relied upon and incorporated into both federal⁶ and state⁷ policies and regulations. The SWRCB’s Ocean Plan must incorporate this science and state policy direction as well, to ensure that the state’s ocean waters and marine ecosystems are fully protected.

Addressing the Existing and Projected Impacts of Climate Change in Ocean Waters

Global climate change is altering the temperature, sea level, timing of ocean processes, and ocean pH of California’s ocean.⁸ These changes to the fundamental biological, chemical,

⁴ Letter from Linda Sheehan, Center for Marine Conservation and Ann Notthoff, NRDC to Dr. Francis Palmer, SWRCB, Comments on Triennial Review of the California Ocean Plan (Oct. 15, 1998), Attachment 1 to Letter from The Ocean Conservancy, NRDC and Defenders of Wildlife to SWRCB (May 17, 2004) (attached to these comments).

⁵ As with vessel wastes, desalination and brine disposal have been raised as issues of importance for Ocean Plan management repeatedly in NGO comments since 1998; see attachments to this letter.

⁶ See, e.g., U.S. EPA, “Clean Water Act Section 303(d): Notice of Call for Public Comment on 303(d) Program and Ocean Acidification,” 75 Fed. Reg. 13537 (March 22, 2010), available at: <http://edocket.access.gpo.gov/2010/pdf/2010-6239.pdf>.

⁷ See, e.g., California Natural Resources Agency, “2009 California Climate Adaptation Strategy” (Dec. 2009), available at: <http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF>; see also Climate Action Team, Ocean and Coastal Resources Group, “Establish State Policy to Avoid Future Hazards and Protect Critical Habitat: Near Term Implementation Plan,” available at: http://www.climatechange.ca.gov/climate_action_team/reports/catnip/coastal/Ocean%20and%20coastal%20protect%20habitat%201%20CATNIP.pdf.

⁸ See, e.g., Largier, J.L., B.S. Cheng, and K.D. Higgason, editors. 2010. *Climate Change Impacts: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries*. Report of a Joint Working Group of the Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils. 121 pp., available at: http://farallones.noaa.gov/eco/climate/pdf/climate_report.pdf (“*National Marine Sanctuaries Climate Change Impacts Report*”).

and physical properties of California ocean waters are well understood and recognized by the scientific community and by policymakers. For example, in June 2010 a consortium of governmental and academic institutions released *Climate Change Impacts: Gulf of the Farallones and Cordell Bank National Marine Sanctuaries Report* (National Marine Sanctuaries Climate Change Impacts Report), which catalogs numerous climate change impacts to the California ocean environment in detail.⁹ This Report identifies as priority issues (among others): **ocean pH, ocean temperature, and sea level rise**, each of which should be addressed as amendments to the Ocean Plan.¹⁰ Each priority issue has a high likelihood of increasing impacts, and each is associated with a series of severe and significant ecological changes.¹¹ We urge the Water Board to adopt the recommendations below in order to ensure that the Ocean Plan both reflects and acts on the latest and best scientific knowledge on climate change, and fully protects the beneficial uses of the waters of the state. The Water Board should also undertake its own review of growing scientific evidence and literature on climate change impacts to California's ocean as it drafts and incorporates additional amendments during this triennial review process.

Ocean pH/Ocean Acidification

Ocean acidification, a decrease in ocean pH fueled by the ocean's absorption of carbon dioxide, threatens the seawater quality and ecosystem health of California's bays and estuaries.¹² Global average surface pH has already decreased by approximately 0.1 units, and is expected to decrease by another 0.3-0.4 units by the end of the century, depending on future levels of atmospheric carbon dioxide.¹³ In 2008, scientists discovered high levels of acidified ocean water off the Pacific Coast;¹⁴ the latest science strongly suggests that such acidification may accelerate.¹⁵ Ocean acidification triggers a cascade of impacts to marine life and related beneficial uses. Marine organisms with shells and skeletons, such as plankton and shellfish, will be particularly impacted by ocean acidification; California's giant kelp species are also especially vulnerable.¹⁶

Given the demonstrated ocean acidification impacts to seawater quality, the Water Board should amend the Ocean Plan's water quality standard for ocean pH so that it is sufficiently

⁹ *Id.*

¹⁰ *Id.* at p. 91.

¹¹ *Id.*

¹² Feely, R.A., C.L. Sabine, J.M. Hernandez-Ayon, D. Ianson, and B. Hales. 2008. "Evidence for upwelling of corrosive "acidified" seawater onto the continental shelf." *Science* 320, 1490 DOI: 10.1126/science.1155676.

¹³ Hauri, Claudine, Gruber, N., Lachkar, Z., Plattner, G. 2009 Abstract. "Accelerated acidification in eastern boundary current systems." Goldschmidt Conference Abstracts, citing Orr, J.C., V.J. Fabry, O. Aumont, L. Bopp, S.C. Doney, R.A. Feely, A. Gnanadesikan, N. Gruber, A. Ishida, F. Joos, and others. 2005. "Anthropogenic ocean acidification over the twenty-first century and its impact on calcifying organisms." *Nature* 437 (7059), doi10.1038/nature04095.

¹⁴ Feely *et al.*, pp. 1490-1492. <http://www.sciencemag.org/cgi/content/abstract/sci;320/5882/1490>. See also Hauri *et al.* at p. 66.

¹⁵ Byrne, R. H., S. Mecking, R. A. Feely, and X. Liu. 2010. "Direct observations of basin-wide acidification of the North Pacific Ocean." *Geophys. Res. Lett.* 37, L02601, doi:10.1029/2009GL040999.

¹⁶ Hauri *et al.* at p. 66: "The two dominant species of the giant kelp forest (*Saccharina* and *Nereocystis*) exhibit species-specific adverse responses to low pH and high UVB (Swanson and Fox, 2007), suggesting that any combination of these two global change factors could possibly lead to a change in species composition and reduced biodiversity." http://www.tos.org/oceanography/issues/issue_archive/issue_pdfs/22_4/22-4_hauri.pdf.

stringent to protect all listed beneficial uses. The current pH standard in the Ocean Plan (Ocean Plan Section II.D.2: “The pH shall not be changed at any time more than 0.2 units from that which occurs naturally”) is decades old and fails to reflect modern scientific knowledge.¹⁷ For example, mounting ocean acidification science indicates that a 0.2 change in pH will in fact adversely impact sea water quality and ocean water properties.¹⁸

Accordingly, to ensure protection of the beneficial uses of the state’s increasingly threatened ocean ecosystems, the State Water Board should revise the pH standard in the Ocean Plan to read at a minimum that: “The pH shall not be changed at any time more than 0.2 units from that which occurs naturally, *or in amounts that may negatively impact calcium carbonate-dependant organism productivity.*” The more protective standard, of course, and the one that the state should reach for, would be: “*For marine waters, pH should not deviate measurably from naturally occurring pH levels.*” The latter is the only standard that will ensure protection of the state’s ocean waters and marine life, particularly in the face of growing threats from ocean acidification. Implementation of this standard should be supported by a uniform protocol for measuring and monitoring pH along the California coast, a program that we also urge to the Water Board to adopt.

In sum, we request that the Water Board include two ocean acidification tasks in a revised Workplan and prioritize them for early action, as previously requested by stakeholders¹⁹ during the 2007 Ocean Plan triennial review process: (1) establish a new, more stringent water quality criteria for pH that fully protects beneficial uses in light of new science associated with ocean acidification, along with an implementation program for this standard change, and (2) draft and include in the Ocean Plan clear monitoring requirements for ocean pH so that a baseline can be immediately established to monitor changes in pH and the effectiveness of new control actions.

Ocean Temperature

With respect to addressing the climate change-driven changes in water temperature, we urge the Water Board to either update the Ocean Plan to address such impacts, or commit to a date certain to revise the Thermal Plan,²⁰ which has not been updated in many years.²¹ The sole

¹⁷ 33 U.S.C. § 1314(a)(1).

¹⁸ See Center for Biological Diversity, “Petition for Revised pH Water Quality Criteria under Section 304 of the Clean Water Act, 33 U.S.C. Section 1314, to Address Ocean Acidification” (December 18, 2007), p. 14, available at: http://www.biologicaldiversity.org/campaigns/ocean_acidification/pdfs/section-304-petition-12-18-07.pdf (citing Caldiera, K. *et al*, Comment on “Modern-age buildup of CO₂ and its effects on seawater acidity and salinity” by Hugo A. Loáiciga, *Geophysical Research Letters* 34: L18608 (2007)).

¹⁹ Letter from Center for Biological Diversity to SWRCB, “Comment Letter on California Ocean Plan Amendment,” (July 26, 2007), available in SWRCB files in full, and in part at: http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oplans/scopemtjune2007/comments/miyoko_sakashita.pdf.

²⁰ SWRCB, Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (undated), available at: http://www.waterboards.ca.gov/water_issues/programs/ocean/docs/wqplans/thermpln.pdf.

²¹ A cryptic endnote contains an apparent (otherwise unreferenced) date of “1-16-98,” though the first page of the Plan states that it “revises and supersedes the policy adopted by the State Board on January 7, 1971, and revised October 13, 1971, and June 5, 1972.”

reference to temperature standards set to protect ocean waters in the Ocean Plan is in “Section C.3. - Applicability,” which states that:

Provisions regulating the thermal aspects of waste* discharged to the ocean* are set forth in the Water Quality Control Plan for the Control of Temperature in the Coastal and Interstate Waters and Enclosed* Bays and Estuaries* of California [Thermal Plan].

Given that the Thermal Plan has not been updated since at least 1998, and given that the focus of the Thermal Plan is on coastal power plant and industrial discharges that add direct heat discharges to ocean waters,²² the Plan is simply inadequate to address the new temperature impacts in coastal waters brought about by climate change.²³ The Ocean Plan must accordingly be updated to address impacts to ocean waters from temperature changes associated with climate change. It cannot continue to ignore this responsibility by inaccurately asserting it is being addressed elsewhere. As with ocean pH, temperature standards need to be developed, and adhered to through regulatory and other means, to protect the beneficial uses of the states ocean waters.

Sea Level Rise

The Ocean Plan can and must reflect the science showing the impacts of climate change driven-sea level rise on ocean waters and ecosystems.²⁴ This is of particular importance to nearshore, sensitive beneficial uses such as “marine habitat” and “preservation and enhancement of marine areas of special biological significance.” Accordingly, and at a minimum, Ocean Plan “Section II.C. – Physical Characteristics” should be revised to include a provision that sets a standard for protecting beneficial uses in light of increasing stress brought about by climate change-driven sea level rise. “Section III. – Program of Implementation” should similarly be updated to include provisions that ensure that regulated activities do not cause or contribute to violations of that standard.

Updates of Other Standards As Needed to Ensure Ocean Resiliency

Finally and more generally, the impacts of climate change in ocean waters may be severe and widespread, and ocean ecosystems will need to be sufficiently resilient to withstand the onslaught of such impacts. As the *National Marine Sanctuaries Climate Change Impacts Report* observes, major climate change impacts on ocean chemistry are often overlooked.²⁵ For

²² Note, for example, both the language of the Plan and its location on SWRCB’s Coastal Power Plants page at: http://www.waterboards.ca.gov/water_issues/programs/index.shtml#ocean, rather than on the Ocean Standards page.

²³ See, e.g., *National Marine Sanctuaries Climate Change Impacts Report* at p. 34; Ishii, M., M. Kimoto, K. Sakamoto, and S.I. Iwasaki, 2006. “Steric sea level changes estimated from historical ocean subsurface temperature and salinity analyses.” *J. Oceanogr.*, 62(2), 155-70; Levitus, S., J.I. Antonov, and T.P. Boyer, 2005. “Warming of the World Ocean, 1955-2003.” *Geophysical Research Letters*. 32:L02604, doi: 10.1029/2004GL021592.

²⁴ See, e.g., Graham, M.H. 2007. “Sea-level change, effects on coastlines.” Denny, M.W. and SD Gaines (eds), *Encyclopedia of Tidepools*, University of California Press pp. 497-498.

²⁵ *National Marine Sanctuaries Climate Change Impacts Report* at p. 80.

example, “the release of methylmercury from sediments is favored in conditions of lower salinity, lower pH, anoxia and greater temperature.”²⁶

For this reason, a provision calling for “resiliency to current and potential climate change impacts” should be added as a general water quality objective in Section II.A. of the Ocean Plan, and all existing Ocean Plan standards should be reviewed and updated as needed to ensure that they are sufficiently stringent to protect the health of the ocean in light of these previously-unforeseen impacts.

* * *

Thank you for the opportunity to provide these comments. If you have any questions, please do not hesitate to contact us.

Sincerely,



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Attachments:

Letter from Heal the Bay, California Coastkeeper Alliance and Defenders of Wildlife to SWRCB, “Comments on the Amendments to the California Ocean Plan Scoping Document” (July 19, 2007)

Letter from The Ocean Conservancy, NRDC and Defenders of Wildlife to SWRCB. “Comments on Triennial Review of the California Ocean Plan” (May 17, 2004), including Attachment 1: Letter from Linda Sheehan, Center for Marine Conservation and Ann Notthoff, NRDC to Dr. Francis Palmer, SWRCB, Comments on Triennial Review of the California Ocean Plan (Oct. 15, 1998)

²⁶ *Id.*, citing Ulrich, S.M., T.W. Tanton and S.A. Abdrashitovita. 2001. “Mercury in the aquatic environment: A review of factors affecting methylation.” *Critical Reviews in Environmental Science and Technology* 31:241-292.