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October 6, 2010

Mr. Joe LaClair
San Francisco Bay Conservation and Development Commission
50 California Street, Ste 2600
San Francisco, CA 94111
Submitted via email to joel@bcdc.ca.gov.

RE: Proposed San Francisco Bay Plan Amendment No. 1-08 Concerning Climate Change

Dear Mr. LaClair,

Thank you for the opportunity to submit these comments on behalf of California Coastkeeper Alliance. California Coastkeeper Alliance (Alliance) represents 12 Waterkeeper groups spanning the California coast from the Oregon border to San Diego. The Alliance and its member Waterkeepers work daily to protect and maintain healthy coastal and estuarine habitats throughout the state. On behalf of the Alliance, I strongly support San Francisco Bay Conservation and Development Commission's (BCDC) work to issue clear guidance on how to manage sea level rise in the San Francisco Bay Area.

Sea level has risen eight inches since 1900 and is projected to rise more than an additional foot by 2050, and nearly five feet by 2100. Much of the Bay Area's critical infrastructure lies close to the shoreline, at or near sea level: two international airports, multiple emergency and health care facilities, myriad industrial facilities, and 21 wastewater treatment plants. The inundation of any of one of these sites could disrupt the delivery of critical public services to large numbers of Bay Area residents and release unknown amounts of pollutants into the environment. As sea water creeps inland, salt water will intrude into the Bay Delta Estuary and groundwater basins, impacting ecosystem health and fresh-water supplies. Additionally, many of the Bay's low-lying wetland areas are at risk of inundation, which could undermine Bay Area communities' substantial investments in restoring wetlands and tidal marshes.¹

We now know that projected sea level rise, combined with high tides and storm surges, will put Bay Area infrastructure and ecosystems at risk much sooner than 2050. BCDC's adoption of a strong Bay Plan Amendment Concerning Climate Change (BPA 1-08) can protect the critical wetlands and shoreline areas that sustain a high quality of life for Bay Area residents. Alternatively, a weak or delayed policy will put public safety and the local economy and environment in jeopardy. I therefore urge BCDC to adopt a strong Bay Plan Amendment Concerning Climate Change that will protect vulnerable Bay Area communities and ecosystems from sea level rise.

¹ See Matthew Heberger, Heather Cooley, Pablo Herrera, Peter H. Gleick, and Eli Moore, "The Impacts of Sea Level Rise on the California Coast" (2009), PIER Research Report, CEC-500-2009-024-D, Sacramento, CA: California Energy Commission ("Pacific Institute SLR Report"), p. 29 (citing Hutzell 2008) ("Numerous wetland restoration projects have been initiated in the San Francisco Bay, with the cost of restoring these tidal marshes ranging from \$5,000 to \$200,000 per acre.").

I. BCDC’S AMENDMENT OF THE BAY PLAN TO ADDRESS SEA LEVEL RISE IS A REASONABLE EXERCISE OF ITS LEGAL DUTIES AND RESPONSIBILITIES.

BCDC’s adoption of climate change amendments to the Bay Plan is not only a *permissible* exercise of its authority, it is *necessary* to BCDC’s fulfillment of its two primary mandated responsibilities. BCDC’s mission is twofold: protect and enhance the San Francisco Bay and encourage its responsible use.² With an estimated \$62 billion worth of property³ and hundreds of acres of wetlands at risk of inundation or flooding from sea level rise,⁴ BCDC cannot fulfill its mission without issuing clear guidance on how to address sea level rise. The planning and regulatory activities squarely within BCDC’s jurisdiction are already understood to encompass the management of sea level rise impacts. BCDC’s Climate Change Amendments merely provide additional clarification and guidance on existing policies in the San Francisco Bay Plan, which date back to July 2001:⁵

Policy 4: “To prevent damage from flooding, structures on fill or near the shoreline should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers.”⁶

Policy 6: “Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect future relative sea level rise and should assure that new structures and uses attracting people are not approved in flood prone areas.”⁷

In addition to permitting authority strictly conferred to BCDC by state legislation, BCDC has additional powers and duties which must be considered in interpreting BCDC’s role in regulating shoreline areas impacted by sea level rise. BCDC has public trust responsibilities, which are statutorily conferred under the McAteer-Petris Act.⁸ The Bay Plan calls upon the Commission to ensure that trust uses “such as commerce, navigation, fisheries, wildlife habitat, recreation, and open space” are preserved. BCDC also has management authority as the federally-designated state coastal management agency for the San Francisco Bay segment of the California coastal zone. This means that, like the California Coastal Commission, BCDC can use the authority of the federal Coastal Zone Management Act to ensure that federal projects and activities are conducted consistent with state law and, in this case, the policies of the Bay Plan.

BCDC’s development and implementation of BPA 1-08 is supported by state guidance on climate change. The Governor’s California Climate Adaptation Strategy specifically noted that the San Francisco Bay Conservation and Development Commission, along with the State and Regional Water Quality Control Boards, California State Parks, and the State Lands Commission should “continue to develop

² “[BCDC] is dedicated to the protection and enhancement of San Francisco Bay and to the encouragement of the Bay’s responsible use.” See BCDC’s Mission Statement at <http://www.bcdc.ca.gov/mission.shtml>.

³ California Natural Resources Agency, “2009 California Climate Adaptation Strategy: A Report to the Governor of the State of California in Response to Executive Order S-13-2006” (CA Climate Adaptation Strategy), p. 68 (“The initial estimates of development in San Francisco Bay in 2100 indicate that over \$62 billion worth of building and contents could be at risk.”), available at www.climatechange.ca.gov/adaptation.

⁴ Two thirds of the nearly \$100 billion worth of property that is at risk of flooding from projected sea level rise are concentrated on the San Francisco Bay. See Pacific Institute Report on Sea Level Rise, p. 3.

⁵ Sea Level Rise is also referenced in the San Francisco Bay Plan in Finding k, p. 28; Policy 5, p. 29, in the Section Concerning Tidal Marshes and Tidal Flats Around the Bay; and Policy 4, p. 34, in the Section Concerning Subtidal Areas in the Bay.

⁶ San Francisco Bay Plan, p. 39.

⁷ *Id.*

⁸ CAL GOV’T Code § 66604 (Westlaw 2010).

adaptation strategies that can be implemented through their existing planning and regulatory programs” before November 2010.⁹ Additionally, CEQA Guidelines Section 15126.21 states that “[l]ead agencies should disclose any areas governed by the general plan that may be particularly affected by global warming, e.g.: coastal areas that may be subject to increased erosion, sea level rise, or flooding”

BCDC’s Bay Plan Amendment 1-08 fills a badly needed void in the San Francisco Bay Area’s preparation for sea level rise providing technical assistance and crafting a set of best practices for local governments and communities as they face sea level rise.

II. BPA 1-08 SHOULD REFLECT KEY COASTAL PLANNING PRINCIPLES, INCLUDING GUIDANCE IN THE CALIFORNIA CLIMATE ADAPTATION STRATEGY.

To date, the California Climate Adaptation Strategy (CAS) provides the best guidance on crafting regional and local adaptation strategies to address sea level rise. BCDC, along with the Ocean Protection Council, California Coastal Conservancy, California Coastal Commission, State Lands Commission, Department of Fish and Game, and State Parks contributed to the development of strategies in CAS to manage ocean and coastal resources under threat from climate change.¹⁰ The California Attorney General’s Office also refers communities undertaking local planning processes to use the California Climate Adaptation Strategy as guidance to “assess climate change impacts, identify areas most vulnerable to these impacts, and to develop reasonable and rational risk reduction strategies.”¹¹

The CAS articulates foundational principles and strategies to guide state and local agencies in crafting sea level rise adaptation policies. Many of the strategies are best practices of coastal planning that have become necessary in light of projected sea level rise. The BPA Amendment 1-08 findings and policies should reflect the following five key principles and directly reference the CAS language, as appropriate:

1. Restrict development in hazard zones.
2. Prioritize adaptation strategies that enhance an ecosystem’s natural adaptive capacity.
3. Discourage the use of structural protective barriers such as sea walls.
4. Critical habitats must be protected and “buffered.”
5. Coastal resilience is the overriding goal of adaptation strategies (instead of aiming only to reduce vulnerability).

A. Preserve Key Provisions of BPA 1-08.

There are several existing provisions in BPA Amendment 1-08 that reference adaptation strategies that utilize natural ecosystem processes and make shoreline areas more resilient to sea level rise, as well as the other above-referenced key principles. I strongly support the amendments listed below that reflect these key principles, and I urge BCDC to preserve the existing language in these amendments, or, at the very least, the meaning conveyed in the existing language, in its final draft. (Please note that if a finding or policy is not listed below, it does not necessarily reflect a lack of support for those provisions.)

⁹ CA Climate Adaptation Strategy, p. 158.

¹⁰ CA Climate Adaptation Strategy, p. 72.

¹¹ Recommendation 9 states that “[c]ommunities with General Plans and Local Coastal Plans should begin when possible to amend their Plans to assess climate change impacts, identify areas most vulnerable to these impacts, and to develop reasonable and rational risk reduction strategies using the California Adaptation Strategy as guidance.” <http://ag.ca.gov/globalwarming/ceqa/generalplans.php>.

- Findings “k” and “l” Tidal Marshes and Tidal Flats Section (pp. 4-5). I support these findings, which recognize the necessity of sediment transport to aid landward marsh migration. An adequate supply of sediment is particularly crucial to aid the inland migration of wetlands because the “high degree of development and infrastructure placed in near-shore areas restricts the inland migration of wetlands”¹² in many areas around the San Francisco Bay.
- Finding “n” Tidal Marshes and Tidal Flats Section (p. 5). I strongly support the addition of this new finding to define buffer areas and highlight their ability to mitigate rising sea levels. Protecting critical habitat is identified as a key “near-term” action in the CAS in order to protect coastal resources from sea level rise.¹³ The creation of buffers of open space around beaches and wetland areas is a dual-purpose sea level rise adaptation strategy that both increases the amount and diversity of estuarine habitats and enhances an ecosystem’s natural adaptive capacity by allowing beaches and wetlands to migrate inland as the sea level rises.
- Finding “e” Climate Change Section (p. 9). I strongly support the addition of this new finding, which recommends using the most current projections of future sea level rise through an adaptive management approach. Previous drafts of this provision have used different approaches ranging from a “precautionary approach” to a “risk-averse approach.” While employing a precautionary approach might best protect public health and safety, I believe an adaptive management approach is an adequate compromise.

In particular, I support the inclusion of the last phrase in Finding e: “. . . and preclude development that cannot be adapted to sea level rise.” The top priority strategy identified in the California Climate Adaptation Strategy to protect coastal and ocean resources is **“to avoid establishing or permitting new development inside future hazard zones in most cases if new protective structures would be necessary.”**¹⁴ Just as the provisions in BPA Amendment 1-08 reflect BCDC’s recognition that some development in the 100 year floodplain may be permissible or necessary, it is critical that BPA 1-08 recognizes instances where development must be precluded.

- Finding “f” Climate Change Section (p. 10). I strongly support new finding “f,” which defines two important concepts in climate adaptation planning: shoreline resilience and adaptive capacity.

I submit for BCDC’s consideration, additional definitions of resilience that could be integrated into findings and policies throughout BPA 1-08 to further highlight the importance of this concept. A resilient ecosystem is measured by “the capacity of a system to absorb and utilize or even benefit from perturbations and changes that attain it, and so persist without a qualitative change in the system’s structure.”¹⁵ Additionally, a community’s resilience is “a measure of how well people and societies can adapt to a changed reality and capitalize on the new possibilities offered.”¹⁶ In resilient coastal regions, flexibility, adaptability, and durability are prominent themes in planning and management.¹⁷

¹² CA Climate Adaptation Strategy at p. 69.

¹³ CA Climate Adaptation Strategy at p. 74.

¹⁴ CA Climate Adaptation Strategy at p. 72 (emphasis added).

¹⁵ Holling, Crawford Stanley, “Resilience and Stability of Ecological Systems,” *Annual Review of Ecology and Systematics* 4:1-23 (1973).

¹⁶ Douglas Paton, Gail Kelly, and Michael Doherty, “Exploring the Complexity of Social and Ecological Resilience to Hazards” (2006).

¹⁷ See generally Beatley, Timothy, *Planning for Coastal Resilience: Best Practices for Calamitous Times*. Washington DC: Island Press (“Planning for Coastal Resilience”) (2009).

- Findings “l,” “m,” and “n” Climate Change Section (p. 12). I strongly support findings l, m, and n, which collectively describe the importance of the San Francisco Bay shoreline and ecosystem, and recognize some of the ways in which human communities could be impacted if sea level rise adaptation measures are not undertaken.
- Finding “s” Climate Change Section (p. 14). I strongly support this recognition that some undeveloped areas contain critical habitat or may be converted into such habitat, and some developed areas may be ideal for bay migration and habitat enhancement as sea level rises. This finding recognizes the importance of “ecological variability” (i.e. allowing ecosystems to adapt by changing and moving), which coastal planning experts identify as a fundamental component of resilience.¹⁸
- Policy 5, Climate Change Section (p. 16). I strongly support this guidance on developing and updating a regional strategy to adapt to Bay-related impacts of climate change. In particular, I support the language, “resilient Bay and shoreline systems and increasing their adaptive capacity.” Restoring tidal wetlands, eelgrass beds, oyster beds, and other natural coastal ecosystems creates aquatic habitats for threatened species and also establishes a natural buffer against extreme weather.

This policy reflects a forward-thinking framework that will enable local governments and communities to make decisions on a regional scale regarding “areas that should include identification of those areas where development should be protected, those areas where development should eventually be removed and those areas where the Bay should be allowed to migrate inland.”

B. Revise or Delete Language to Strengthen BPA 1-08.

A review of earlier drafts of the Bay Plan Amendment Concerning Climate Change reveals that revisions and changes made since the initiation of the stakeholder process have substantially weakened BPA Amendment 1-08, as reflected by the language of the September 3, 2010 Draft of BPA Amendment 1-08. The below proposed changes to BPA 1-08 the findings and policies are aimed at restoring key coastal planning principles so that the Policy truly protects public health and safety and the San Francisco Bay ecosystem. I respectfully submit the following suggestions for revisions:

- Finding “m” Tidal Marshes and Tidal Flats (p. 5). As described above, I support BCDC’s recognition in findings “k” and “l” of how sediment transport impacts the natural adaptive capacity of wetland and marsh areas. However, I believe that finding “m,” which describes information that is needed to understand sediment transport and volumes in the Bay, should include language about the impacts that barriers, such as dams, culverts and levees, have on sediment transport.

Suggested Revision: “Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. **Dams, culverts, levees and other barriers that inhibit the natural flow of sediments also affect the delivery of sediment to tidal wetlands.** Research on **these and other impacts to** Bay sediment transport processes is needed . . .”

- Finding “k” Climate Change Section (p. 11). This finding has been revised so significantly from earlier drafts that its original meaning has been lost completely. Language in the October 2009

¹⁸ Planning for Coastal Resilience, pp. 8-9.

draft identified the challenge of protecting all developed areas and introduced a potential solution: to remove development. That proposal has been replaced with the statement that “[a] lack of funding to address projected impacts from sea level rise will limit the Bay Area’s ability to meet environmental, public health, equity and economic goals.” This statement does not constitute a useful finding that can guide local action to address sea level rise in any way whatsoever.

Suggested Revision:

Delete this phrase: ~~“A lack of funding to address projected impacts from sea level rise will limit the Bay Area’s ability to meet environmental, public health, equity and economic goals.”~~

Replace it with: ~~“There may be inadequate public funding available to protect all developed areas that are vulnerable to sea level rise and storm surge, and some developed areas may be suitable for ecosystem restoration if existing development is removed and the Bay is allowed to migrate inland.”~~

- Policy 2, Climate Change Section (p. 14). This policy has been weakened considerably from previous drafts by the deletion of the phrase “projects should be discouraged.” It is critically important that the Policies in the Climate Change Section, in addition to the Findings, provide clear guidance on this central point of discouraging projects that are at risk from inundation due to sea level rise.

Suggested Revision: “To protect public safety and ecosystem services, ~~projects should be discouraged~~ within areas vulnerable to future shoreline flooding”

- Policy 5a and 5c, Climate Change Section (p. 17-18). The phrase “shoreline environment” has been replaced with the phrase “shoreline development” in several provisions of BPA 1-08, including Policies 5a and 5c. This new phrase suggests a narrowed focus on the developed environment, which is less preferable than a phrase that encompasses both the natural and developed environment. I therefore encourage BCDC to return to the language of previous drafts and use the phrase “shoreline environment” rather than “shoreline development.”

Suggested Revisions:

“a. advance regional public safety and prosperity by protecting most existing ~~shoreline development~~ ~~shoreline environment~~, especially development that provides regionally significant benefits”

“c. integrate the protection of existing and future ~~shoreline development~~ ~~shoreline environment~~ with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention”

C. Add Key Language to Strengthen BPA 1-08.

I believe there are two important points that are not reflected in the September draft of the BPA 1-08, or are not adequately highlighted.

One important omission from the BPA Amendment 1-08 is language that discourages the use of sea walls and other structures. Structural protection measures have high economic and environmental costs. Sea-walls frequently fail, require costly maintenance, erode adjacent beaches and coastal areas, and decrease the natural adaptive capacity of coastal ecosystems. Sea-walls, like parking-lots, roads, and rails, also prevent the natural migration of wetlands and reduce the amount of salt marsh, and other habitats. Ten percent of California’s coast has already been armored, or “hardened,” including more than a third of coastal areas in the four southernmost counties. The pressure on agencies with coastal management authority to approve permits for sea-walls and levees will increase exponentially as sea-

levels rise and extreme weather and coastal erosion accelerate over the next 50 years. Thus, I request that BCDC incorporate at least one finding and one policy that explain the environmental harms posed by sea walls and other protective structures, and discourage their use.

The second omission was reflected in the October 2009 draft of BPA Amendment 1-08, but has since been removed. The language, “the most risk-averse approach for minimizing the effects of sea level rise and storms is to discourage new development and remove existing development within areas vulnerable to inundation,” is a quintessential finding of the Climate Adaptation Strategy. This point is central in meeting the goals of BCDC’s Climate Change Program. Thus, I request that it be put back into the Policy Section of the BPA Amendment.

- Requested Addition as a Policy in the Climate Change Section: “**The most risk-averse approach for minimizing the effects of sea level rise and storms is to discourage new development and remove existing development within areas vulnerable to inundation.**”

III. THE BAY PLAN AMENDMENT SHOULD BE REVISED SO THAT PROVISIONS REGARDING INFILL DEVELOPMENT DO NOT LIMIT BCDC’S DISCRETIONARY AUTHORITY.

The integration of mitigation and adaptation strategies is an important goal of BCDC’s Bay Plan Amendment to address climate change.¹⁹ Indeed, a climate adaptation strategy that also reduces greenhouse gas emissions is clearly preferable from an economic and environmental standpoint. There are numerous types of such dual purpose, “no-regrets” strategies. One simple example is the preservation of wetlands, which buffer sea level rise and storm surges and can also be used for carbon sequestration. Additionally, low-impact development techniques such as rain gardens and cisterns, which mitigate flooding from storm-surges and rises in sea-level, can also reduce California’s substantial energy budget dedicated to moving water (20%) by creating local, sustainable supplies.

Over the course of revisions to the Bay Plan Amendment, the larger policy goal of prioritizing adaptation strategies that reduce our regional carbon footprint seem to have been replaced by a narrower preference for infill development. Infill development, defined in the latest BPA Amendments as “the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit,” is certainly a key component of meeting our state and regional greenhouse gas emissions goals. However, infill development scenarios should not be interwoven throughout BPA 1-08 to the extent that it undermines the primary aim of climate change amendments to protect the public’s safety and Bay ecosystems within BCDC’s jurisdiction, particularly because infill development in areas that are vulnerable to sea level rise is directly at odds with state guidance in the CAS, which states:

All levels of government are encouraged to consider:

- Incentive programs to encourage property owners in high-risk areas to relocate or limit future development.
- Clustering new development in areas considered to have a low vulnerability to sea-level rise.
- Creating additional buffers and setbacks for new construction to minimize risks to people and property and to protect coastal resources such as natural habitat and recreational areas.²⁰

¹⁹ Staff’s preliminary recommendations highlight working with the Joint Policy Committee and other agencies to “integrate regionally mitigation and adaptation strategies” as a primary goal.

²⁰ CA Climate Adaptation Strategy, p. 73

Infill development is referenced thirty-one times in the September 3, 2010 draft of BPA Amendment 1-08. This disproportionate focus on infill development appears to supersede other principles and guidance reflected in the Bay Plan and is extremely problematic. Additionally, provisions that reflect a different standard of review for infill development could arguably applied to nearly all developments in a heavily built-out area like the San Francisco Bay Area, and may ultimately undermine BCDC's discretionary authority to evaluate projects. Accordingly, I respectfully request that BCDC revisit and reevaluate all references in BPA Amendment 1-08 to infill development to determine whether they are necessary to meet the overarching climate adaptation goals of the amendments. I also request that BCDC consider deleting the below provisions referencing infill development, which I believe are particularly problematic:

- Findings "p" and "r" Climate Change Section (p. 13)
- Finding "2" Climate Change Section (p. 13)
- Policy 2, Climate Change Section (p. 15)
- Policy 5(g) Climate Change Section (p. 17)
- Policy 6(c) Climate Change (p. 18): ~~infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place.~~

As one of California's first local planning strategies dedicated to addressing sea level rise, BCDC's development of a climate adaptation policy has the potential to not only facilitate the effective management of shoreline areas around the San Francisco Bay, but to serve as a model for the implementation of local climate adaptation strategies throughout the state. I urge BCDC to adopt a strong Bay Plan Amendment Concerning Climate Change and look forward to continuing to work with BCDC staff to achieve this goal.

Sincerely,



Sara Aminzadeh, Programs Manager