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Humboldt  
Baykeeper

February 14, 2014

Inland Empire  
Waterkeeper

California Coastal Commission  
c/o Sea-Level Rise Work Group  
45 Fremont Street, Suite 2000  
San Francisco, CA 94105

Klamath  
Riverkeeper

**VIA ELECTRONIC MAIL:** [SLRGuidanceDocument@coastal.ca.gov](mailto:SLRGuidanceDocument@coastal.ca.gov)

Monterey  
Coastkeeper

**Re: Comments on California Coastal Commission Sea Level Rise Guidance**

Orange County  
Coastkeeper

Dear Coastal Commission members and staff:

Russian  
Riverkeeper

On behalf of California Coastkeeper Alliance (CCKA), a network of twelve local Waterkeeper organizations spanning the California coast, we welcome the opportunity to submit these comments on the California Coastal Commission Sea Level Rise Guidance (Guidance). Sea level rise is an issue of prime importance to our organizations. The United States Geological Survey's Coastal Vulnerability Index rates Humboldt, San Francisco, and Monterey bays, as well as most of the Southern California coast, as "highly vulnerable" to coastal change due to sea level rise.<sup>1</sup>

San Diego  
Coastkeeper

San Francisco  
Baykeeper

Actions to modify coastal development patterns in light of sea level rise have largely occurred on a sporadic, piecemeal basis, largely in response to proposed coastal development projects. Necessarily, this subjects county and city development of coastal development policies, through Local Coastal Plans (LCPs) and other regulatory tools, to significant, well-funded pressure from developers and other stakeholders who have narrow interests in specific projects. This dynamic is at odds with shoreline development that serves the broader public's best interest.

San Luis Obispo  
Coastkeeper

As the lead state coastal land use regulatory and permitting agency, the California Coastal Commission has both tremendous opportunity and considerable responsibility to shape coastal development. The Commission has spent more than five years developing a comprehensive set of guidance for shoreline developers and cities and counties that will likely shape shoreline development for at least the next ten years. We applaud the Coastal Commission for developing comprehensive Guidance that protects public safety and makes good sense for the communities that they will protect, and provides certainty for investments in coastal development in light of projected rises in sea level. We urge the Commission to further strengthen its Guidance in the following ways:

- use its authority to mitigate the impacts of development projects on public trust uses, including public access and the preservation of open space and natural areas;
- restrict new development in hazard zones and evaluate existing vulnerable developments by utilizing risk assessments to ensure that developments are not vulnerable to flooding and sea level rise for the life of the project;

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<sup>1</sup>See E. Hanak and G. Moreno, Public Policy Institute of California, "California Coastal Management with a Changing Climate," at p. 4 (November 2008).

Santa Barbara  
Channelkeeper

Los Angeles  
Waterkeeper

Ventura  
Coastkeeper

- utilize non-structural adaptation strategies that enhance ecosystems' natural adaptive capacity;
- restrict the use of sea walls and other structural protective barriers where a less environmentally damaging alternative exists;
- protect and buffer critical habitats so that they can migrate inland as sea level rises;
- incorporate guidance to safeguard the state's network of marine protected areas; and
- ensure the protection of public access to coastal areas.

**A. The Guidance should recognize the Commission's public trust duty to protect communities and ecosystems from sea level rise.**

We urge the Coastal Commission to use its authority under the public trust doctrine and common law to further strengthen the Guidance as described below in order to protect California communities and ecosystems from the mounting threats posed by sea level rise.

1. The Commission should protect public trust lands newly acquired due to sea level rise.

The California Supreme Court noted in 1971 that the State's public trust easement over privately held tidelands and submerged lands, "is a matter of great public importance, particularly in view of population pressures, demands for recreational property, and the increasing development of seashore and waterfront property."<sup>2</sup> Today, it is of even greater importance because of growing threats to the coast from climate change and sea level rise. Sea level rise will increase state ownership rights to the new mean high tide line because state ownership rights are based upon the mean high tide line.<sup>3</sup> Therefore, rising sea levels advance public trust rights over newly inundated lands below mean high tide.<sup>4</sup> This likely increase in land subject to the public trust supports the Commission's ability to preserve and protect public trust rights on newly submerged lands, including the protection of the environment, natural resources and open space.

The public trust doctrine protects fishing, navigation and commerce, as well as recreation, preservation of open space and protection of the environment.<sup>5</sup> The courts have defined the public trust doctrine to include "the preservation of those lands *in their natural state*, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery

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<sup>2</sup> *Marks v. Whitney*, 6 Cal. 3d 251, 257 (1971).

<sup>3</sup> State ownership of tidelands and submerged lands is consistent with common law principles that, "[t]he state owns all tidelands below the ordinary high water mark and holds such lands in trust for the public ... [and] as the land along a body of water gradually builds up or erodes, the ordinary high water mark necessarily moves and thus the mark or line of mean high tide, i.e., the legal boundary, also moves. *Lechuza*, 70 Cal. Rptr. 2d at 410 and 418. There is one exception to this rule in California, where the upland private property owner does not gain from gradual artificial accretion. *State of Cal. ex rel. State Lands Commission v. Superior Court*, 11 Cal. 4<sup>th</sup> 50, 71-72 (1995); *California ex rel. State Lands Commission v. U.S.*, 457 U.S. 273, 277 (1982).

<sup>4</sup> "As shorelines erode, the public trust doctrine follows the eroding shoreline." James G. Titus, *Rising Seas, Coastal Erosion and the Takings Clause: How to Save Wetlands and Beaches Without Hurting Property Owners*, 57 Maryland Law Rev. 1279, 1368 (hereinafter "Titus"). See also, *Littoral Development*, 24 Cal. App. 4<sup>th</sup> at 1050, note 5. The court held that BCDC's Bay jurisdiction extends to the mean high tide line, but not to the line of highest tidal action.

<sup>5</sup> *Marks v. Whitney*, 6 Cal. 3d at 257. Public trust values also have been incorporated into the California Constitution, Art. X, Sec. 4, which provides that, "No individual, partnership, or corporation, claiming or possessing the frontage or tidal lands of a harbor, bay, inlet, estuary, or other navigable water in this State, shall be permitted to exclude the right of way to such water whenever it is required for any public purpose, nor to destroy or obstruct the free navigation of such water; and the Legislature shall enact such laws as will give the most liberal construction to this provision, so that access to the navigable waters of this State shall be always attainable for the people thereof."

and *climate* of the area (emphasis added).”<sup>6</sup> Therefore, the doctrine protects many of the same values promoted by the California Coastal Act and the Commission’s draft Guidance.

The public trust doctrine creates a duty for states to protect coastal lands and waters for preservation and public use<sup>7</sup> and also establishes a “public easement” held by the State over tidelands and submerged lands that have been transferred to private ownership. Although the State Lands Commission has the general authority to manage California’s tidal and submerged trust lands, the public trust doctrine supports many of the provisions of the California Coastal Act to regulate uses of trust lands to provide “maximum public access to and along the coast and maximize public recreational opportunities in the coastal zone [and] assure priority for coastal-dependent and coastal related development.” (PRC 30001.5) The Commission exercises its trust responsibilities when it acts on a permit, adopts a Local Coastal Plan, adopts a Special Area Plan, changes a regulation, or adopts this guidance document. Although the public trust doctrine does not provide independent regulatory authority, it guides and supports the implementation of the Commission’s existing (and future) laws and policies, including this Guidance.

2. The Commission should use common law doctrines as affirmative remedies to address sea level rise.

Common law doctrines also provide a number of potential affirmative remedies to address the impacts of sea level rise and climate change. Although the Commission may be unable to implement some of these remedies itself, it could work with state agencies such as the State Lands Commission, the Coastal Conservancy and the Attorney General’s Office to assert common law rights to protect lands and waters for public uses, including the preservation of natural areas as open space to help mitigate the impacts of sea level rise.

The common law doctrines of dedication, custom and prescription provide a legal mechanism to preserve public rights to beaches or other areas traditionally used by the public. Privately owned beaches and adjacent uplands that offer access to beaches may be impliedly “dedicated” for public use if members of the public use the beaches or adjacent uplands for five years, as if it were a public recreation area, without objection by the private owner.<sup>8</sup> Public rights may also be gained by “prescription,” if public use is open, notorious and continuous for a statutory period of time.

Activities that endanger public life or health, obstruct the free use of property, interfere with the enjoyment of life or property, or unlawfully obstruct the free passage or use of navigable waters also may constitute a public nuisance.<sup>9</sup> For example, coastal armoring that encroaches on public land has been held a public nuisance in California justifying removal without the payment of compensation.<sup>10</sup> In Florida, construction seaward of an established control line 50 feet from mean high tide is prohibited as a public nuisance under the Beach and Shore Preservation Act.<sup>11</sup>

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<sup>6</sup> *Id.* at 259-260.

<sup>7</sup> *National Audubon Society v. Superior Court of Alpine County*, 658 P.2d 709, 724 (Cal. 1983), *Marks v. Whitney*, 6 Cal. 3d at 257, and *State of California v. Superior Ct. (Lyon)*, 29 Cal. 3d 210, 231 (1981).

<sup>8</sup> *Gion v. City of Santa Cruz*, 2 Cal. 3d 29, 38-41, 465 P.2d 50 (1970); *County of Los Angeles v. Berkeley*, 605 P. 2d 381 (1980); *City of Long Beach v. Daugherty*, 75 Cal. App. 3d 372 (1977).

<sup>9</sup> See Civil Code §3479, and *People v. Mack*, 19 Cal. App.3d 1040, 1050 (1971).

<sup>10</sup> *Scott v. City of Del Mar*, 58 Cal. App. 4th 1296 (1997). The court held that the city’s removal of the sea wall did not constitute inverse condemnation because the “legislature has the power to declare certain uses of property a nuisance and such use thereupon becomes a nuisance *per se.*” *Id.* at 1306. In this case the City declared that the obstruction of a public right-of-way is an abatable nuisance.

<sup>11</sup> Florida Statutes §161.052-053.

Bulkheads or sea walls that flood adjacent properties or cause public beaches to disappear also may be considered a public nuisance.<sup>12</sup>

As sea level rises, development may encroach on public lands, harm other properties, or impede the protection of the coastal zone from the effects of climate change and sea level rise. In proper cases, public agencies may be able to use police powers to remove structures that constitute a public nuisance, or pursue other common law remedies to preserve open space, protect habitat, and provide buffers to accommodate rising sea levels or storm surge. In such cases, the Commission may need to seek additional legislative authority, or work with the Attorney General's Office, the State Lands Commission and other government agencies.

3. The Commission should recognize rolling easements as a regulatory tool to adapt to sea level rise.

The Texas Open Beaches Act authorizes Texas to enforce a public easement over the dry sandy beach from the mean high tide line to the first line of natural vegetation, and to file petitions to remove encroachments on public beaches.<sup>13</sup> This easement expands and contracts – or “rolls” – with the natural migration of the beach vegetation line.<sup>14</sup> New construction on the beach is prohibited, and existing structures that end up encroaching on eroding public beaches may be removed by petition.<sup>15</sup> A rolling easement is possible in states like Texas with a common law public easement above mean high tide.<sup>16</sup>

Although California may not have the same public easement that exists in Texas, state property ownership expands or rolls with the landward movement of the mean high tide line. This should affect how maximum public access is provided or whether an applicant can show sufficient evidence of property ownership. This should also require the removal of structures that end up on state property because of sea level rise, or the prevention of activities that interfere with public trust uses, such as blocking public access, constructing sea walls, or damaging public trust resources such as wetlands or marshes.<sup>17</sup>

4. The Commission should consider sea level rise when implementing the CZMA and CEQA.

The Commission may also address sea level rise and climate change issues under other state and federal laws. For example, the Commission implements the California Coastal Management Program (CCMP) under the federal Coastal Zone Management Act (CZMA). The CZMA authorizes the Commission to determine if a federal agency or federally-permitted activities that affect the coast are conducted in a manner “consistent” with the enforceable policies of the CCMP.<sup>18</sup> These enforceable policies include the Coastal Act, LCPs and the Commission's other laws and policies. The Guidance should be clear that the Commission will

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<sup>12</sup> Titus, *supra* note 88 at 1372, note 392.

<sup>13</sup> Tex. Nat. Res. Code Ann. §61.018.

<sup>14</sup> The term “rolling easement” refers to a “broad collection of arrangements under which human activities are required to yield the right of way to migrating shores.” Titus, *supra* note 112 at 1313.

<sup>15</sup> *Feinman v. State of Texas*, 717 S.W.2d 106 (1986); *Severence v. Patterson*, 485 F.Supp.2d 793 (2007).

<sup>16</sup> New Jersey and Oregon common law also provide for public access to the dry sandy beach above mean high tide. See *Mathews*, 471 A.2d at 358; *Borough of Neptune City v. Borough of Avon-by-the-Sea*, 294 A.2d 47, 51-54 (N.J. 1972; and *State ex rel. Thorton v. Hay*, 462 P.2d 671, 673 (Or. 1969).

<sup>17</sup> Titus, *supra* note 88 at 1313.

<sup>18</sup> 16 U.S.C. §1456(c).

consider sea level rise when analyzing whether a federal agency or activity is acting in a consistent manner with the CCMP.

The California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) provide another opportunity for the Commission to recommend measures to mitigate impacts of development projects on public trust uses, including public access and the preservation of open space and natural areas needed to protect the coastal zone against the impacts of climate change and sea level rise. Pursuant to CEQA, the Commission may prepare its own environmental analysis as the lead agency or, more typically, comment on a project's initial study, negative declaration, notice of preparation or environmental impact report (EIR) as a responsible agency under CEQA.<sup>19</sup> The Commission may also comment on the impacts of federal actions on the coastal zone under NEPA.<sup>20</sup>

### **B. The Guidance should clearly reflect principles espoused in the California Climate Adaptation Strategy.**

To date, the California Climate Adaptation Strategy (CAS) is the most comprehensive source of guidance for both state and local entities developing sea level rise strategies. The development of the Ocean and Coastal Resources Section of the CAS reflects the collective input of other member agencies of the Coastal and Oceans Working Group: California Coastal Conservancy, California Coastal Commission, State Lands Commission, Department of Fish and Game, State Parks, and the Bay Conservation and Development Commission. The California Attorney General's Office instructs local governments to refer to the California Climate Adaptation Strategy in order to develop "reasonable and rational risk reduction strategies."<sup>21</sup>

The Ocean and Coastal Resources Section of the CAS identified key principles to guide coastal adaptation decisions. We urge the Coastal Commission to ensure that the Guidance clearly reflects and reiterates these key principles:

1. *California must protect public health and safety and critical infrastructure.*
2. *California must protect, restore, and enhance ocean and coastal ecosystems, on which our economy and well-being depend.*
3. *California must ensure public access to coastal areas and protect beaches, natural shoreline, and park and recreational resources.*
4. *New development and communities must be planned and designed for long-term sustainability in the face of climate change.*
5. *California must look for ways to facilitate adaptation of existing development and communities to reduce their vulnerability to climate change impacts over time.*<sup>22</sup>

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<sup>19</sup> Pub. Res. Code §21002.1. The California Department of Justice has prepared a fact sheet listing various mitigation measures that can be implemented by local agencies under CEQA. *The California Environmental Quality Act: Addressing Global Warming Impacts at the Local Agency Level*.

[http://ag.ca.gov/globalwarming/pdf/GW\\_mitigation\\_measures.pdf](http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf).

<sup>20</sup> 43 U.S.C. §4321 et seq.

<sup>21</sup> California Attorney General's Office, *Straightforward Answers to Some Frequently Asked Questions*, (Recommendation 9: "Communities 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."). See also Bay Area Conservation and Development Commission, "Update on Guidance for Addressing Climate Change Impacts in California Environmental Quality Act Review," available at [http://www.bcdc.ca.gov/planning/climate\\_change/adaptation/CEQA\\_climate\\_impacts.pdf](http://www.bcdc.ca.gov/planning/climate_change/adaptation/CEQA_climate_impacts.pdf).

<sup>22</sup> California Climate Adaptation Strategy at p. 72.

**C. The Guidance should restrict new development in hazard zones and evaluate existing vulnerable developments.**

Approximately 85 percent of Californians live or work along bay or coastal areas and face sea level rise without the means to adjust to expected impacts.<sup>23</sup> As higher sea levels, high tides, storm surges, and inland flooding coincide, projected inundation will impact homes, workplaces, water supply canals, wastewater treatment plants, power plants, hospitals, airports, and other critical public infrastructure and facilities throughout California.<sup>24</sup>

*CAS Principle 1: “California must protect public health and safety and critical infrastructure.”<sup>25</sup>*

*CAS Principle 5: “California must look for ways to facilitate adaptation of existing development and communities to reduce their vulnerability to climate change impacts over time.”<sup>26</sup>*

The Commission should ensure that the Guidance does not underestimate potential sea level rise, but rather employs a sound “precautionary principle” to address any potential uncertainty. Uncertainty could cause further delay in implementation of critical measures to protect vulnerable areas at the state and local levels.

The Guidance’s discussion of best available science specifically identifies the 2012 National Research Council report as the best available science on sea level rise.<sup>27</sup> While this is the case for most of California’s coast, in locations where there are higher resolution or dynamic projections that incorporate local dynamics (eg. around Humboldt Bay, which experiences land subsidence), communities should be specifically directed to use these.<sup>28</sup> In addition, the discussion of best available science should identify to processes that require more robust information and projections. For example, we generally lack projections for changes in fluvial flood frequency and magnitude, changes in local precipitation patterns, changes in coastal storm frequency and magnitude, local sediment transport processes and changes, marsh accretion processes, and sediment budgets. Existing models of habitat evolution (i.e., SLAMM) may not even be suitable for the generation of projections of future locations of California marshes. The Guidance should reference this information gap and propose an approach for communities to either fill this gap or build contingencies around it.

To the extent that scientific uncertainty persists in the sea level rise projections and maps at California’s disposal, the Guidance should explain how to move forward through uncertainty with the use of the precautionary principle, rather than simply citing the existence of uncertainty and leaving local authorities to guess how best to move forward. The 1998 Wingspread Statement on the Precautionary Principle states that “when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause

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<sup>23</sup> “Considering sea level rise as a coastal hazard,” Proceedings of Coastal Zone ’07 Portland, OR (July 22-26, 2007); California Climate Adaptation Strategy at p. 3.

<sup>24</sup> See California Climate Change Center, “The Impacts of Sea-Level Rise on the California Coast,” (May 2009), available at [www.pacinst.org/reports/sea\\_level\\_rise/report.pdf](http://www.pacinst.org/reports/sea_level_rise/report.pdf) (Impacts of Sea-Level Rise on the California Coast); CA Climate Adaptation Strategy at pp. 65, 68.

<sup>25</sup> California Climate Adaptation Strategy at p. 72.

<sup>26</sup> *Id.*

<sup>27</sup> Coastal Commission Draft Sea Level Guidance at p. 23.

<sup>28</sup> Coastal Commission Draft Sea Level Guidance at p. 30.

and effect relationships are not fully established scientifically ... the proponent of an activity, rather than the public, should bear the burden of proof... ."<sup>29</sup>

Since some level of uncertainty will likely persist with sea level rise projections, the Commission should advise state and local decision-makers to take precautionary measures that place the burden of proof on those who propose action or inaction that is at odds with addressing the threats posed by sea level rise. A precautionary approach with respect to sea level rise is also warranted because storm surges and other extreme weather events will cause episodic flooding sooner and to more areas than would be evident from assuming gradual sea level rise.<sup>30</sup>

Additionally, the Guidance should encourage local governments to begin identifying which coastal areas and infrastructure will receive protection from sea level rise, such as those that are vital to public safety and services. A clear list of areas and projects vital to public health and safety will help California is to limit the loss of our beaches and coastal areas. The Guidance should encourage state agencies to develop and implement policies for managed retreat and/or removal of existing non-essential development in hazard prone areas, as well as public projects that impede natural sand replenishment on our coast.

*CAS Principle 4: "New development and communities must be planned and designed for long-term sustainability in the face of climate change."*<sup>31</sup>

As the Guidance recognizes, an estimated 480,000 people and \$100 billion worth of property in California are already at risk from sea level rise compounded by shifting precipitation and extreme weather events.<sup>32</sup> If California does not take action to mitigate sea level rise impacts and other projected climate impacts, the costs will be crippling. If no adaptation actions are taken in California, damages across sectors could result in "tens of billions of dollars per year in direct costs and expose trillions of dollars of assets to collateral risks."<sup>33</sup> Climate adaptation strategies and policies should be designed to limit existing risk to people, property, and ecosystems, and to prevent development that subjects the state and its people to additional financial and public safety dangers.

The Ocean and Coastal Resources Section of the CAS emphasizes that the top priority near-term action of state policy is "to avoid establishing or permitting new development inside future hazard zones in most cases if new protective structures would be necessary." Additionally, the CAS makes clear that "state agencies should generally not plan, develop, or build any new significant structure in a place where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure."<sup>34</sup>

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<sup>29</sup> See Science & Environmental Health Network Precautionary Principle Webpage: <http://www.sehn.org/precaution.html>.

<sup>30</sup> Impacts of Sea-Level Rise on the California Coast at p. 2 ("The issue is not simply one of impacts from a gradual rise in the average water levels; higher averages also imply more frequent and more powerful storms and wave attacks, which will exacerbate erosion and shoreline retreat.").

<sup>31</sup> California Climate Adaptation Strategy at 72.

<sup>32</sup> Heberger, Matthew, 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.

<sup>33</sup> California Climate Adaptation Strategy at p. 3, citing D. Roland-Holst and F. Kahl, U.C. Berkeley "California Climate Risk and Response," (November 2008), available at: [http://www.next10.org/research/research\\_ccr.html](http://www.next10.org/research/research_ccr.html).

<sup>34</sup> California Climate Adaptation Strategy at 73.

The emphasis on avoiding coastal hazards should be strengthened in the Guidance.<sup>35</sup> Proposed new development in known future hazard zones should be required to overcome a strong presumption of incompatibility, and any permits should contain conditions that mitigate impacts to Coastal Act Resources (i.e., that the development will be engineered to accommodate coastal change, including habitat evolution, and that the development will never seek permits for armoring of any kind). Furthermore, the principles should direct applicants and municipalities to prioritize green infrastructure approaches to minimizing hazard risk – for both new and existing development. The section discussing application for new development in hazard zones should be reframed to discourage applications for development in the future locations of beaches and other coastal habitat.<sup>36</sup> There should be no loss of future habitat from the combined impacts of sea level rise and development.

CCKA supports the use of risk assessments when planning shoreline areas or designing larger projects based on the estimate 100-year flood elevation taking into account best estimates of future sea level rise. These assessments should identify all types of potential flooding, degrees of uncertainty, consequences of defense failure, and risks to public safety and the ecosystem. Risk assessments should ensure that projects are designed to be resilient to flooding risks and sea level rise projections for the life of the project. These risk assessments, already required in San Francisco Bay by the San Francisco Bay Conservation and Development Commission (SF Bay Plan, Climate Change Policy 2 and 3, March 2012), should be required throughout the coast of California by the Coastal Commission and local governments.

**D. The Guidance should recommend adaptation strategies that enhance an ecosystem’s natural adaptive capacity and discourage the use of “coastal armoring” structural barriers.**

*CAS Principle 2: “California must protect, restore, and enhance ocean and coastal ecosystems, on which our economy and well-being depend.”*

As the ocean moves inland, coastal ecosystems will undergo changes of enormous magnitude. Salt water will intrude into estuaries and groundwater basins, impacting ecosystem health and fresh-water supplies. Moreover, 350,000 acres of California’s dwindling and critically important coastal wetlands face flooding from sea-level rise.<sup>37</sup> A San Diego State University study found that 25 percent of San Diego’s inland fresh-water marshes could be lost to a rising sea.<sup>38</sup> Decisions about how to deal with rising sea level, inundation, and associated impacts will have a profound impact on the future of the California coast. Coastal managers and policymakers will consider both environmentally-destructive strategies such as coastal armoring, and more sustainable, “soft” protection solutions such as barrier beaches and wetlands.<sup>39</sup> If harmful armoring structures, such as sea walls and levees, become the default approach to deal with sea level rise, it would significantly alter the functioning of coastal habitats, which could in turn decrease the overall adaptive capacity of coastal ecosystems.

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<sup>35</sup> California Coastal Commission Draft Sea Level Rise Guidance at p 24.

<sup>36</sup> Id at p 52.

<sup>37</sup> New York Sea Level Rise Report at pp. 10, 60.

<sup>38</sup> Dr. Rick Gersberg, Graduate School of Public Health, San Diego State University “Application of SLAMM 5.1 to San Diego County, CA,” (May 26, 2009).Dr. Gersberg’s lab modeled how San Diego coastal habitats might change based on different climate change scenarios.

<sup>39</sup> California Climate Adaptation Strategy at p. 75.

The Commission could direct developers and local governments to focus on “coastal resilience”<sup>40</sup> as the overriding goal of adaptation strategies. The CAS specifies that activities that bolster resilience should be a focus: “the state should pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands.”<sup>41</sup> 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.”<sup>42</sup>

With clear direction from the Commission, and with adequate time, data, and resources, coastal managers could pursue adaptation strategies that achieve coastal resilience by protecting coastal areas from sea level rise with strategies that benefit coastal ecosystems. Low-impact development techniques such as permeable pavement and vegetated buffers will slow and sink storm-water runoff, mitigating flooding from storm surges and rises in sea level. Creating buffers of open space around beaches and wetland areas similarly increases the amount and diversity of coastal habitats and allows beaches and wetlands to migrate inland as the ocean advances. Restoring tidal wetlands, eelgrass beds, oyster beds and other natural coastal ecosystems both creates aquatic habitats for threatened species and establishes a natural buffer against extreme weather.

Specifically, the Commission could further develop the recommendation to require mitigation of unavoidable impacts to Coastal Act Resources.<sup>43</sup> Mitigation is a reasonably familiar concept in the wetlands context, but the Commission should elaborate on when and how mitigation should be required in the context of sea level rise. We recommend that mitigation be required any time new development would reasonably be expected to constrain the evolution of coastal natural habitat as sea level rises. In addition, the discussion of minimizing impacts on coastal wetlands and Environmentally Sensitive Habitat Areas would be made stronger by treating the construction of structures in future wetlands the same way we treat construction in existing wetlands – by forbidding or mitigating it.<sup>44</sup>

As described below, Commission Guidance should communicate support for coastal resilience in the face of sea level rise, and specify those practices that state and local entities can employ in order to achieve it.

1. Prioritize funding for non-structural protection measures that enhance an ecosystem’s natural adaptive capacity.

The draft Guidance under emphasizes the inherent value and importance of natural shoreline areas. It also does not articulate the need for adaptation strategies that utilize natural ecosystems processes and make shoreline areas more resilient to sea level rise and other climate change driven-dynamics. The Guidance should directly reference CAS language on protecting natural shoreline features and identifying habitat restoration opportunities.

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<sup>40</sup> See generally Beatley, Timothy, *Planning for Coastal Resilience: Best Practices for Calamitous Times*. Washington DC: Island Press (2009) (Planning for Coastal Resilience).

<sup>41</sup> See California Climate Adaptation Strategy at p. 74 (recommendation include preservation of natural areas that contain critical habitat for tidal wetland restoration, habitat migration, or buffer zones).

<sup>42</sup> Holling, Crawford Stanley, “Resilience and Stability of Ecological Systems,” *Annual Review of Ecology and Systematics* 4:1-23 (1973).

<sup>43</sup> Coastal Commission Draft Sea Level Guidance at p. 26.

<sup>44</sup> Coastal Commission Draft Sea Level Guidance at p. 57.

The Coastal Commission should highlight in the Guidance the merits of non-structural protective measures, and specifically delineate what techniques are available so that agencies can pass this guidance along to local governments and stakeholders as they develop sea level rise plans and policies.<sup>45</sup> The U.S. National Oceanic and Atmospheric Administration (NOAA) has been restoring natural ecosystem features, or “Living Shorelines,” such as eelgrass beds to stabilize coastal ecosystems for more than two decades on the East Coast and in areas of the Gulf Coast, with a project currently being explored on the San Francisco Bay.<sup>46</sup> New York’s recent Sea Level Rise Report to their Legislature also provides some instructive language on the importance of natural adaptive capacity in light of sea level rise: “natural shoreline features ... currently provide large-scale services, such as flood protection, storm buffering, fisheries habitat, recreational facilities and water filtration, at almost no cost. These services would be prohibitively expensive to replicate with human-built systems.”<sup>47</sup>

2. Protect and buffer critical habitats so that they can migrate inland as sea level rises.

Wetlands and marshes are likely to play a critical role in how the coast responds to sea level rise and climate change. Wetlands, including natural subtidal areas and tidal marshes, absorb floodwaters, sequester greenhouse gases, and trap sediments and pollutants.<sup>48</sup> Wetlands also can adapt to rising sea levels, migrate inland, and continue to provide key habitat and feeding grounds for a wide variety of aquatic and terrestrial species.<sup>49</sup>

To preserve coastal ecosystem functions, wetlands and other natural features must be allowed to respond naturally or migrate inland as sea level rises. The CAS advises that:

[T]he state should identify priority conservation areas and recommend lands that should be considered for acquisition and preservation. The state should consider prohibiting projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones. The strategy should likewise encourage projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats.

New York’s proposed regulatory framework to consider sea level rise in proposals for development and infrastructure in high-risk coastal areas is guided by four clear rules:

- 1) restrict hard structural shoreline protective measures and development in priority areas for wetland, dune, and beach migration;
- 2) prioritize and incentivize the use of non-structural and soft shoreline protection measures to reduce risk;
- 3) provide larger buffers or setbacks between natural protective features and new development;
- 4) require local and regional planning efforts to establish areas for migration of natural protective features.<sup>50</sup>

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<sup>45</sup> *Id.* at 11.

<sup>46</sup> See National Oceanic and Atmospheric Administration (NOAA), Habitat Conservation and Restoration Center, Living Shorelines Webpage, available at <http://www.habitat.noaa.gov/restoration/techniques/livingshorelines.html>.

<sup>47</sup> New York Sea Level Rise Report at p. 9.

<sup>48</sup> *Bay Plan* at 7.

<sup>49</sup> *Id.*

<sup>50</sup> New York Sea Level Rise Report at p. 33.

Both the CAS and the New York State Sea Level Rise Report contains readily adaptable text on this point, as provided above. The Guidance should include similar equivalent findings and declarations.

Much of the State's coastal wetland areas vanished long ago, making the conservation of remaining wetland areas even more important.<sup>51</sup> The Commission should use the public trust doctrine to support its permit and regulatory actions to protect tidal wetlands up to mean high tide. As noted earlier, the public trust doctrine supports the preservation of trust lands "*in their natural state*, so that they may serve as ecological units for scientific study, as open space, and as environments which provide food and habitat for birds and marine life, and which favorably affect the scenery and *climate* of the area (emphasis added)."<sup>52</sup> The Commission should ensure that development does not harm vulnerable wetlands and marsh areas.

The Commission may also want to consider supporting non-regulatory strategies to protect wetlands and marshes, such as the expansion of the federal Coastal Barrier Resources System (System). The System was created by Congress in 1982 to discourage development in hazardous coastal areas. It prohibits federal flood insurance and other federal subsidies for new development on coastal barrier islands particularly vulnerable to flooding and storms.<sup>53</sup> The System was expanded to barrier islands and coastal wetlands in the Florida Keys, Puerto Rico and the Great Lakes in 1990,<sup>54</sup> and the Department of the Interior was directed to map and recommend areas along the Pacific Coast for inclusion into the System. However, this effort was never undertaken.

Although the System does not foreclose development, it deters development in vulnerable coastal areas and could be expanded to the West Coast to include coastal wetlands and low-lying areas vulnerable to sea level rise. Expanding the federal System to California, or establishing a state Coastal Barrier Resources System, would help remove perverse market incentives for developing flood-prone areas vulnerable to sea level rise.

3. Restrict the use of sea walls and other structural protective barriers where a less environmentally damaging alternative exists.

"A fortified coast comes with major financial, social, and ecological costs."<sup>55</sup>

Sea walls, levees and barriers have serious environment impacts to the beaches and coastal areas where they are placed. Armoring structures constructed at the back of the beach stop natural shoreline erosion that would otherwise cause beaches to migrate inland as sea level rises. As a result, the rising water covers the existing beach and no new beach is created; this dynamic is known as "passive erosion."<sup>56</sup> Sea walls, levees, and other structures also interrupt the sediment transport process. While 70 to 90 percent of beach sand comes from rivers and streams,

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<sup>51</sup> The 200,000 original acres of tidal marsh in the Bay have been reduced to 40,000 acres, and 6,000 miles of tidal channels have been reduced to 1,000. *Baylands Ecosystem Habitat Goals, A report of habitat recommendations prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project*. U.S. EPA, San Francisco, California, San Francisco Regional Water Quality Control Board, Oakland, California at 1 (1999), [www.sfei.org/sfbaygoals](http://www.sfei.org/sfbaygoals).

<sup>52</sup> *Marks v. Whitney*, 6 Cal. 3d at 259-260.

<sup>53</sup> 16 U.S.C. §§ 3501-3510.

<sup>54</sup> Elise Jones, *Economic Incentives for Environmental Protection: The Coastal Barrier Resources Act*, 21 *Envtl. L.* 1015, 1020 (1991).

<sup>55</sup> *No Day at the Beach* at 538.

<sup>56</sup> *Id.*

the majority of the remainder comes from eroding bluffs and cliffs.<sup>57</sup> With upstream dams capturing river sediment and coastal armoring reducing coastal erosion, sediment supply to beaches has been appreciably reduced.<sup>58</sup> When combined with sea level rise, armored bluffs gradually allow the sandy beaches below them to become subsumed by the ocean. This process has resulted in the disappearance of many beaches throughout California's coastline where coastal armoring is pervasive, such as the Ocean Beach community in San Diego and in Santa Cruz.

Beach habitat loss due to coastal armoring also triggers a cascade of ecological impacts to dependent species. A recent study comparing armored and unarmored Southern California beaches found that armored beaches had significantly fewer and smaller intertidal macro-invertebrates, three times less shorebirds, and four to seven times less gulls and other birds.<sup>59</sup>

Additionally, sea-walls often fail to protect shoreline properties and are costly to build and maintain. An analysis from 1999 found that heavy revetments cost as much as \$2,000 per linear foot and full seawalls ran to as much as \$4,500 per square foot.<sup>60</sup> New York's Sea Level Rise Task Force Report found that "over the long term, cumulative environmental and economic costs associated with structural protection measures, such as seawalls, dikes, and beach nourishment, may be more expensive and less effective than non-structural measures, such as elevation of at-risk structures and planned relocation away from the coastal shoreline, especially in less urbanized areas."<sup>61</sup>

The construction of seawalls, revetments and other shoreline protection devices along the coast often are necessary to protect existing development and public infrastructure. However, in the wrong location, armoring can have significant adverse impacts by impeding public access to and along the shore, destroying beaches and important habitat, reducing sediment inputs, reducing shoreline resiliency, preventing the inland migration of wetlands, increasing erosion on adjacent properties, impeding the flood control functions of natural systems, increasing flooding in unprotected areas, and visually impairing coastal resources.<sup>62</sup> For this reason, many states have banned or restricted the construction of seawalls and other armoring devices to protect beaches and other public trust uses.<sup>63</sup>

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<sup>57</sup> Michael Slagel & Gary Griggs, "Cumulative Loss of Sand to the California Coast by Dam Impoundment" (2006), available at [http://www.dbw.ca.gov/csmw/PDF/Slagel&Griggs\\_CA\\_Dam\\_Manuscript.pdf](http://www.dbw.ca.gov/csmw/PDF/Slagel&Griggs_CA_Dam_Manuscript.pdf).

<sup>58</sup> *Id.* ("As much as 50 percent of the sand originally delivered to the coast in Southern California, 31 percent in Central and 5 percent in Northern California has been lost, the great majority of this impounded behind dams in reservoirs.")

<sup>59</sup> Dugan, J. E., Hubbard, D. M., Rodil, I. F., Revell, D. L. and Schroeter, S., "Ecological effects of coastal armoring on sandy beaches," *Marine Ecology*, 29: 160-170 (2008), doi: 10.1111/j.1439-0485.2008.00231.x.

<sup>60</sup> See Lesley Ewing *et al.*, "Procedural Guidance Document: Beach Erosion and Response" 39 (1999).

<sup>61</sup> New York Sea Level Rise Report at p. 9.

<sup>62</sup> Caldwell, *supra* note 117 at 539-542; Todd T. Cardiff, *Conflicts in the California Coastal Act: Sand and Seawalls*, 38 California Western Law Review 255, 258-261 (2001).

<sup>63</sup> The California Coastal Act prohibits shoreline protective devices for *new* development and requires new development to be designed so that it does not require the construction of armoring devices. Pub. Res. Code § 30253(b). But it also allows shoreline protective devices to protect *existing* development from erosion if designed to mitigate adverse impacts on shoreline sand supply. Pub. Res. Code § 30235. Maine, North and South Carolina prohibit seawalls and the construction of permanent erosion control devices on coastal dunes or areas seaward of a setback line based upon erosion rates and sea level rise projections. Maine Coastal Sand Dunes Rules Ch. 355.5(C)-(E) (2006), S.C. Code Ann. § 48-39-280 and 290; N.C. Gen. Stat. §§ 113A-115.1 (2006). Rhode Island bans erosion control devices along its entire oceanfront to protect public trust uses and allow wetlands and beaches to adapt to sea level rise. Rhode Island Coastal Resources Management Program § 300.7(D)(1)(2006). Oregon bans coastal armoring altogether.

State laws banning or restricting sea walls and coastal armoring generally are not considered a taking, and have been upheld on various grounds.<sup>64</sup> States may also require mitigation fees for the construction of seawalls, or require the creation of new wetland areas inland of levees and armoring projects.

The California Coastal Act limits the approval of shoreline protective devices to those necessary to protect physical improvements.<sup>65</sup> This should be used to prevent the armoring of undeveloped properties that absorb flood waters caused by sea level rise, reducing the need to protect developed areas elsewhere. The Commission could also consider in lieu fees to mitigate impacts of shoreline protection devices on public access or purchase comparable beach access or shoreline properties.<sup>66</sup>

Coastal armoring, through the construction of sea walls, revetments, and other concrete barriers, is at odds with CAS Principle 2, which recognizes the protection, restoration, and enhancement of coastal ecosystems as an essential component of adapting to climate change. The application of a California Coastal Act provision requiring that "conflicts be resolved in a manner which on balance is the most protective of significant coastal resources," also weighs against the use of structural measures where a less environmentally damaging alternative exists.<sup>67</sup>

Some state agencies with coastal permitting authority are already limiting the approval of structures that would require sea walls and limiting the permitting of sea walls. However, over the next 50 years, the pressure on coastal agencies to approve permits for seawalls and levees will increase exponentially as sea levels rise and extreme weather and coastal erosion accelerate.<sup>68</sup>

It is crucial that the Guidance reflect the core principle that armoring structures should be discouraged where a less environmentally damaging alternative exist, in order to secure the uniform implementation of this policy as sea level rise increases pressure on state and local agencies.

#### **E. The Guidance should recognize and safeguard the state's network of marine protected areas.**

The Coastal Commission's development of Sea Level Rise Guidance presents an opportunity to incorporate policy guidance to address projects that may impact marine life or habitat in California's new network of marine protected areas (MPAs), and other special marine areas, through Coastal Commission programs and decisions. The Coastal Commission's Strategic Plan for 2013-2018 acknowledges the need for the Commission to develop updated policy guidance to address projects that may impact marine life or habitat in California's new network of MPAs. Development of guidance will help integrate the purposes and benefits of MPAs into the decision making process, fit MPAs into the context of Commission goals and its practices regarding other special areas, and make decisions more efficient and consistent. In

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<sup>64</sup> Oregon's law banning armoring for shoreline development built after 1977 was upheld on the grounds that it did not deny all economic use of the property. *Stevens v. City of Cannon Beach*, 854 P.2d 449, 459-460 (Or. 1003). *Shell Island Homeowners Ass'n v. Tomlinson*, 124 N.C. App. 217 (1993), upheld as constitutional North Carolina's ban on hardened structures. California cases include: *Whaler's Village Club v. Cal. Coastal Comm'n*, 173 Cal. App. 3d 240 (1985) (Coastal Commission's conditions were reasonable); *Scott v. City of Del Mar*, 58 Cal. App. 4th 1296 (1997) (armoring that encroached on public lands was a nuisance); *Barrie v. Cal. Coastal Comm'n*, 196 Cal. App. 3d 8 (1987) (no vested right to construct sea wall under an emergency permit).

<sup>65</sup> Pub. Res. Code §§30235 and 30253(b).

<sup>66</sup> *Ocean Harbor House Homeowners Association v. California Coastal Commission*, 163 Cal. App.4th 215 (2008).

<sup>67</sup> Cal. Pub. Res. Code § 30007.5.

<sup>68</sup> No Day at the Beach at 534 ("As sea level rises, pressure to armor the coast will grow.").

short, MPA guidance will help realize the full potential of the MPA network and better meet the Commission's mandate to safeguard coast and ocean resources.

The Coastal Commission could include very straightforward language in its Sea Level Rise Guidance to identify MPAs, and other marine areas with protective designations, as sensitive areas meriting special protection under the Coastal Act. Section 30230 states that “[s]pecial protection should be given to areas and species of special biological or economic significance.” A finding that MPAs are areas of special biological or economic significance reflects the strong overlap between Section 30230 and the goals of the MLPA to protect rare habitats, natural diversity of marine life and the integrity of marine ecosystems. Section 30230 goes on to state that “[u]ses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms....” The guidance could provide further justification for protecting MPAs by emphasizing their importance in sustaining biological productivity through the protection of large prolific fish and their value in protecting the integrity of marine ecosystems, thereby maintaining healthy populations of all marine species. To that end, the MLPA design process put a premium on siting MPAs in productive “hot spots” that encompass a rich diversity of habitats.

In the long-term, we urge the Commission to establish criteria that must be met when considering projects that could have adverse impacts on MPAs and other sensitive marine areas. Once developed for the Commission's own use, these components could also be integrated into guidance to local governments for updates to Local Coastal Programs (LCPs). The guidance should identify information that a project proponent must include or reference in a permit application in order for the application to be considered complete. For example, the application should include information on the location and purpose of MPAs and other special marine areas that could be affected by a proposed project. We look forward to working with the Coastal Commission and its staff to craft and implement MPA guidance.

**F. The Guidance must ensure the protection of public access to coastal areas and beaches.**

*CAS Principle 3: California must ensure public access to coastal areas and protect beaches, natural shoreline, and park and recreational resources.*

Shoreline and coastal views, beaches, parks, and other open spaces are integral to California's coastal communities, the quality of life for residents and visitors, and to our economy. These defining coastal resources are seriously at risk of inundation from projected sea level rise, unless our state prioritizes continued public access to coastal areas and the protection of beaches, parks, and other recreational resources on the coast. These access issues have significant economic implications for our state. California's beach and ocean-dependent economy generates an estimated \$46 billion per year.<sup>69</sup> Direct spending at the beach through tourism and recreation contributes one-third of this amount.<sup>70</sup>

Public access to coastal areas would also be significantly diminished if the construction of sea walls and revetments accelerates on pace with sea level rise, as is feared without clear policy directives. Rather than being able to scramble down bluffs and dunes, beach-goers

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<sup>69</sup> See review of economic assessments of the value of beaches in Pendleton, Linwood, Philip King, Craig Mohn, D. G. Webster, Ryan K. Vaughn, and Peter Adams, “Estimating the Potential Economic Impacts of Climate Change on Southern California Beaches,” (2009) PIER Research Report, CEC-500-2009-033-D, Sacramento, CA: California Energy Commission.

<sup>70</sup> *Id.*

encounter would be vertical concrete walls or riprap fields, making it difficult or impossible to safely reach the sand below.<sup>71</sup> Armoring structures can also directly occupy the beach; a rock revetment may cover 30 to 40 feet of beach width, as it must slope outward from the cliff top, replacing sandy public beach area for recreation with a boulder field.<sup>72</sup> And, as described above, sea walls and other armoring structures prevent natural erosion and migration inland, decreasing the amount of beach available for the public to access.<sup>73</sup> Much of the Ventura County shoreline is already lined with revetments protecting the Pacific Coast Highway, completely restricting access where the beach has narrowed to the point there is no remaining dry sand.

The current draft of the Guidance under emphasizes the importance of continued public access in the face of sea level rise. The Coastal Commission must ensure that the final Guidance provides clarity to agencies on how to preserve public access to the beach and coast, as well as protect other coastal recreational resources. Therefore, the Guidance should require that public access be designed to remain viable for the life of the project or that alternative access be provided similar to requirements recently adopted by the San Francisco Bay Conservation and Development Commission (Bay Plan Public Access Policy 6).

In order to mitigate the loss of the public's enjoyment of coastal areas, the Guidance should advise state and local entities to immediately commence an assessment of vulnerable coastal state and county parks, beaches, and shoreline areas. Subsequently, state and local agencies should consider and apply strategies to retain natural coastal areas such as managed retreat, and the purchase of conservation easements behind existing public natural areas to allow for inland migration. Given the public's considerable interest—and legal right—to continue accessing coastal areas as sea level rises, the Guidance must include specific guidance on how to reduce coastal armoring and other impediments to public access.<sup>74</sup>

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Commission guidance about how to manage sea level rise will either enhance and protect critical coastal shoreline areas, beaches, and wetlands—or allow the irrevocable loss of these critical economic and environmental resources, along with the quality of life California now provides. We urge the Coastal Commission to ensure that this Guidance will provide the clear direction needed to ensure the effective management of California's shoreline and coast in the face of coming climate change impacts.

Sincerely,



Sara Aminzadeh  
Executive Director  
California Coastkeeper Alliance

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<sup>71</sup> See Garry Griggs, "California's Retreating Coastline: Where Do We Go From Here?," Proc. Am. Meteorological Soc. Ann. Meeting (San Diego) 83,244 (2005).

<sup>72</sup> *Id.*; No Day at the Beach at 540.

<sup>73</sup> See No Day at the Beach at 540.

<sup>74</sup> For a comprehensive analysis of potential law and policy tools to secure public access threatened by coastal armoring and sea level rise, see No Day at the Beach.