

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

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October 1, 2009

TO: Commissioners and Alternates
FROM: Will Travis, Executive Director (415/352-3653 travis@bcdc.ca.gov)
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SUBJECT: Draft Staff Report and Revised Preliminary Recommendation for Proposed Bay Plan Amendment 1-08 Concerning Climate Change
(For Commission consideration on November 5, 2009)

Revised Preliminary Staff Recommendation Summary

The staff preliminarily recommends that the Commission:

1. Amend the Bay Plan by adding a new Climate Change policy section as identified under the heading, "Proposed Additions to Bay Plan Findings and Policies" (pp. 3 through 12)
2. Amend the Bay Plan Protection of the Shoreline, Safety of Fills, Tidal Marshes and Tidal Flats, and Public Access findings and policies as identified under the heading, "Proposed Changes to Existing Bay Plan Findings and Policies" (pp. 12 through 13).

Background

BCDC first became concerned about the impacts of climate change on the Bay twenty years ago, when the Commission undertook a pioneering study on accelerated sea level rise and developed findings and policies in the Safety of Fills section of the Bay Plan to account for sea level rise in all projects that involve fill in the Bay. Aside from the increasing annual rate of sea level rise, other changes in the last twenty years necessitate a broader approach that addresses the overall impacts of climate change on San Francisco Bay, including, but not limited to, accelerated sea level rise.

Perhaps the biggest change in those twenty years is the attention received by the international, consensus-based approach to delivering scientific conclusions for policy-makers instigated by the United Nations Intergovernmental Panel on Climate Change (IPCC). Because the IPCC represents a wide range of scientific opinion, its conclusions are generally conservative, but widely accepted. However, another important change in the last twenty years is that the effects of climate change are already being observed. Conclusions in both the IPCC and state-sponsored work are based, in part, on observed changes in global surface temperature, ocean water temperature, ocean acidification, and land and sea ice melt. Finally, what was lacking twenty years ago was conclusive evidence that climate change is caused largely by human actions—primarily the release of carbon dioxide into the atmosphere. Today, such evidence solidly links the significant human contribution to greenhouse gases, beginning with industrialization, to increases in global temperature.

In 2006, the state of California employed IPCC scenarios to develop a report on climate change impacts in the state. In that same year, the legislature passed the Global Warming Solutions Act requiring reductions in greenhouse gas emissions. The most recent update to the IPCC assessment reports was in 2007 and, in 2008, the state reported the results of an updated analysis of climate change scenarios. Both reports conclude that the reduction of greenhouse gases now will reduce the degree to which the world must adapt to the effects of climate change. However, it is inevitable that over the next century global temperatures will increase 1° to 3° C (1.8° to 5.4° F). To deal with this increase in temperature, adapting to climate change and its impacts is both unavoidable and essential.



Making San Francisco Bay Better

Global warming is expected to result in sea level rise in San Francisco Bay of 16 inches (40 cm) by mid-century and 55 inches by the end of the century. The Pacific Institute estimated that the economic value of Bay Area shoreline development (buildings and their contents) at risk from a 55-inch rise in sea level is \$62 billion—nearly double the estimated value of development vulnerable to sea level rise along California’s Pacific Ocean coastline. An estimated 270,000 people in the Bay Area will be at risk of flooding, 98 percent more than are currently at risk from flooding. In those areas where lives and property are not directly vulnerable, the secondary and cumulative impacts of sea level rise will affect public health, economic security and quality of life.

By mid-century, 180,000 acres of Bay shoreline are vulnerable to flooding, and 213,000 acres are vulnerable by the end of the century. Vulnerability within today’s 100-year floodplain will increase from a one percent chance of flooding per year to a 100 percent chance of flooding per year by mid-century. As a result of higher sea levels combined with storm activity, extreme storm events will cause most of the shoreline damage from flooding.

The scope of changes in the Bay and on its shoreline from climate change cut across multiple policy sections of the Bay Plan. Currently, sea level rise policies are located in Safety of Fills. In 2000, the Tidal Marshes and Tidal Flats policy section was amended, and the issue of sea level rise was included in a list of requirements for the analysis of restoration projects. The projected impacts of climate change affect nearly every policy section of the Bay Plan. One approach for addressing these impacts would be to amend every affected policy section. However, individual Bay Plan policies are never applied in isolation from other policies. Therefore, the most effective approach is to create a new Climate Change policy section that can be used with other policy sections of the Bay Plan and to update only those particular sections that require more specific clarity.

Background material for the proposed amendment is presented in the staff background report entitled, *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*, dated April 7, 2009, that provides the information for the staff’s proposed changes to the Bay Plan that follow in this staff report and preliminary recommendation.

Public Hearings and Workshops

The Commission held three public hearings on the proposed Bay Plan Amendment No. 1-08 on May 7, June 4, and July 16, 2008 and it conducted three public workshops on September 15, 16 and 17, 2009 in Vallejo, Palo Alto and San Francisco. Staff responses to public hearing comments, both written and spoken are included with the revised preliminary recommendation and incorporated where appropriate. A summary of comments received at the three public workshops was mailed separately.

Revised Preliminary Recommendation

The staff preliminarily recommends that the Commission amend the Bay Plan as follows:

1. Proposed Additions to Bay Plan Findings and Policies

- a. Create a climate change policy section of the Bay Plan that addresses the following:
 - (1) Updating sea level rise scenarios and using them in the permitting process;
 - (2) Developing a long-term strategy to address sea level rise and storm activity and other Bay-related impacts of climate change in a way that protects the shoreline and the Bay;
 - (3) Working with the Joint Policy Committee (JPC) and other agencies to integrate regionally mitigation and adaptation strategies and adaptation responses of multiple government agencies, to analyze and support environmental justice issues, and to support research that provides useful climate change information and tools;
 - (4) Provides recommendations and requirements to guide planning and permitting of development in areas vulnerable to sea level rise; and
 - (5) Includes policies that promote wetland protection, creation, enhancement and migration.

2. Proposed Changes to Existing Bay Plan Findings and Policies

- a. Amend the policies on protection of the shoreline to address protection from future flooding.

- b. Amend the policies on safety of fills by updating the findings and policies on sea level rise and moving some to the new climate change section of the Bay Plan.
- c. Amend findings and policies on tidal marshes and tidal flats to ensure that buffer zones are incorporated into restoration projects where feasible and sediment issues related to sustaining tidal marshes are addressed.
- d. Amend findings and policies on public access to provide public access that is sited, designed and managed to avoid significant adverse impacts from sea level rise and ensure long-term maintenance of public access areas.

Proposed Additions to Bay Plan Findings and Policies

The following formats were used to clarify additions and deletions between the staff’s preliminary and revised preliminary recommendations:

1. Proposed additions in language from the original preliminary recommendation are shown as underlined, while proposed language deletions are shown as ~~struck through~~.
2. Proposed new additions in language for the revised preliminary recommendation are double underlined, and proposed deletions in language are underlined and struck through for language additions included in the original preliminary recommendation.
3. Deletions of Bay Plan language not included in the original preliminary recommendation are ~~double struck through~~.
4. Reasons for the proposed changes are included in the Staff Analysis in the right column, including a separate discussion where changes are proposed in the revised preliminary recommendation shown in *italics*.
5. Existing Bay Plan language is shown as plain text.

Climate Change. The staff preliminarily recommends the Commission add a new Bay Plan “Climate Change” policy section at the beginning of Part IV of the Plan - Developing the Bay and its Shoreline - and include the proposed findings and policies below.

Revised Climate Change Section

Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>a. <u>Greenhouse gases naturally reside in the earth’s atmosphere, absorb heat emitted from the earth’s surface and radiate heat back to the surface causing the planet to warm. This natural process is called the “greenhouse effect.” The planet is warming at an accelerated rate due largely to the rapid release through human activities and subsequent accumulation of greenhouse gases in the atmosphere since industrialization.</u></p>	<p>The new finding describes the causes of climate change.</p>
<p>Add underlined language as follows:</p> <p>b. <u>The future extent of global warming is uncertain. The United Nations Intergovernmental Panel on Climate Change developed a series of scenarios that describe a range of global development pathways and estimate greenhouse gas emissions for each scenario. Those scenarios have been used in global climate models to develop projections of climate change impacts, including sea level rise.</u></p>	<p>The new finding describes how United Nations scenarios are used to address uncertainty regarding future global development and the corresponding impacts climate change.</p>

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<p>Add underlined language as follows:</p> <p>c. <u>Global warming is accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g. glaciers). Melting of the Greenland and Antarctic ice sheets would cause even higher rates of sea level rise. Bay water levels are likely to experience a corresponding rise in water level. In the last century, sea level in the Bay rose nearly eight inches. The Commission is responsible for protecting the public and the Bay ecosystem from exposure to the substantial risk of flooding, which is best achieved through precautionous or risk-averse planning, such as by using a higher-emissions scenario for climate change. Based on such a scenario, the most recent scientific projections indicate that global warming will cause sea level to increase by 16 inches near mid-century and 55 inches near the end of the century. As new information on climate change becomes available, future sea level rise projections are likely to change.</u></p>	<p>The new finding explains the connection between global warming and sea level rise. It describes the Commission's responsibility to use a risk-averse approach to protect the public from flooding and to protect the Bay ecosystem from climate change impacts. This finding also explains the sound science that supports such an approach.</p> <p>The additions clarify the finding refers to the Bay ecosystem and clarify wording.</p>
<p>Add underlined language as follows:</p> <p>d. <u>The shoreline area currently designated as the 100-year floodplain by the Federal Emergency Management Agency will be vulnerable to yearly flooding by mid-century. Much of the developed shoreline would will require new or upgraded shoreline protection to reduce damage from flooding. Structural shoreline protection can adversely affect the Bay ecosystem, block visual access, adversely impact physical public access and create a false sense of security. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive structural shoreline protection.</u></p>	<p>The new finding describes the potential need for new shoreline protection and the potential adverse effects of structural shoreline protection.</p>
<p>Add underlined language as follows:</p> <p>e. <u>Most shoreline impacts from flooding will be caused by the combined effects of storm activity and higher water level due to sea level rise. During a storm, low air pressure causes a rapid rise in sea level, called storm surge. Water levels are also elevated by rain runoff and extreme high tides, which occur more often in the winter when storms are more frequent. The coincidence of these events is also more likely to occur during El Niño events years, which are becoming more frequent. High winds produce waves, which when generated on elevated water,</u></p>	<p>The new finding makes the point that most flooding will occur during storm events before sea level rise regularly inundates shoreline areas. The finding describes how sea level rise and storm activity combine to cause flooding.</p> <p><i>The finding was revised in staff's revised preliminary recommendation to delete the statement regarding El Niño events increasing because the scientific evidence that the frequency of El Niño events is increasing is inconclusive. Minor changes were made to clarify language.</i></p>

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<p><u>run further up on the land surface and causing more damage than they otherwise would when water levels are elevated. The combination of higher global sea level and runoff from early Sierra Nevada snowmelt can prolong the duration of higher water levels from storm surge. The combined effects of sea level rise, storm surge, tributary flooding, high tides, high winds, and El Niño events will likely cause severe flooding and erosion long before shoreline areas are permanently inundated by sea level rise alone.</u></p>	
<p>Add underlined language as follows:</p> <p>f. <u>A system, such as a socio-economic systems, an ecosystems, or a residential community, is resilient when it can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Depending on a system's Systems with adaptive capacity, it may adjust to these changes by moderating potential damages, taking advantage of new opportunities arising from climate change, or accommodating the impacts. Systems that are currently under stress or overly challenged have lower adaptive capacity.</u></p>	<p>The new finding defines two important concepts in climate adaptation planning: shoreline resilience and adaptive capacity.</p> <p><i>Minor changes were made in staff's revised preliminary recommendation to clarify language.</i></p>
<p>Add underlined language as follows:</p> <p>g. <u>Mitigation of climate change refers to actions that reduce greenhouse gas emissions. Adaptation refers to actions taken to address potential impacts or experienced impacts of climate change that lead to a reduction in risks. Adaptation actions can include moving structures outside of flood and inundation zones, protecting shorelines, or designing new construction to be resilient to sea level rise. Some actions can integrate adaptation and mitigation strategies, such as restoring tidal marshes that both sequester carbon and provide flood protection, serve as both adaptation and mitigation. Adaptation and mitigation measures that are implemented before sea level rises may protect lives, property and ecosystems. Many adaptation strategies are untested, particularly those intended to be effective in a dynamic estuary. Expanding the range of effective adaptive strategies will require innovation, testing and refinement. Some strategies will need to be tested on a large scale to determine whether they provide adequate protection, achieve habitat protection and meet enhancement goals.</u></p>	<p>The new finding defines mitigation as it is commonly used to address climate change. The finding further defines adaptation, points out that mitigation and adaptation efforts should be integrated, and describes the benefits of beginning adaptation planning immediately.</p> <p><i>The last three sentences were added to staff's revised preliminary recommendation to clarify the nascent state of climate adaptation practice and the need to test strategies to develop more effective adaptation methods. Minor changes were to clarify language.</i></p>

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Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p><u>h. Adaptive management is a cyclic, learning-oriented approach that is especially useful for complex environmental systems characterized by high levels of uncertainty about system processes and the potential for different ecological, social and economic impacts from alternative management options. Adaptive management requires monitoring the results of policy implementation or management actions, and integrates this information into future actions.</u></p>	<p><i>The new finding was added in staff's revised preliminary recommendation to define adaptive management, as it is commonly understood in managing human interventions in complex systems. It also describes how effective adaptive management is implemented.</i></p>
<p>Add underlined language as follows:</p> <p><u>h. i. Shoreline residences development, and infrastructure, all critical to public health and the region's economy, are vulnerable to flooding from sea level rise and storm activity. Public safety may be compromised and personal property may be damaged or lost during floods. Important public shoreline infrastructure, such as airports, ports, regional transportation, and wastewater treatment facilities are at risk of flood damage that could require costly repairs and result in the interruption or loss of vital services. 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.</u></p>	<p>The new finding describes the impacts of flooding on the developed shoreline.</p> <p><i>In staff's revised preliminary recommendation, the last sentence was added to enumerate some of the choices that must be made when preparing a regional adaptation strategy. It was re-lettered from h. from i.</i></p>
<p>Add underlined language as follows:</p> <p><u>i. j. Because they are located immediately adjacent to the Bay, waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity. Flooding of, or damage to these areas could result in the loss of important public spaces and recreational opportunities, adversely affecting the region's quality of life.</u></p>	<p>The new finding describes the impacts of flooding on shoreline recreation areas.</p> <p><i>The finding was re-lettered from i. to j.</i></p>
<p>Add underlined language as follows:</p> <p><u>j. k. The Bay ecosystem contains diverse and unique plants and animals and provides many benefits to humans. For example, tidal wetlands provide critical flood protection, improve water quality, and sequester carbon. The ecosystem is already stressed by human activities that lower its adaptive capacity, such as diversion of freshwater inflow and loss of tidal wetlands. Climate change will further alter the</u></p>	<p>The new finding describes some of the benefits humans derive from the Bay and the impacts of climate change on the Bay ecosystem.</p> <p><i>The finding was re-lettered from j. to k. The word demand was changed to dynamics for clarity.</i></p>

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<p><u>ecosystem by inundating or eroding wetlands and ecotones, changing sediment demand dynamics, altering species composition, changing freshwater inflow and salinity, altering the food web, and impairing water quality, all of which may overwhelm the system's ability to rebound and continue functioning. Moreover, further loss of tidal wetlands will increase the risk of shoreline flooding.</u></p>	
<p>Add underlined language as follows:</p> <p>k. <u>l. Residents in some communities, particularly those with low incomes or disabilities, lack the resources to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to help these people be part of resilient shoreline communities.</u></p>	<p>The new finding describes the particular vulnerabilities of residential communities to flooding, especially low-income residents.</p> <p><i>In staff's revised preliminary recommendation, the phrase "or disabilities" was added to clarify that people with disabilities will face particular challenges in responding to the impacts of sea level rise and storms. The finding was re-lettered from k. to l.</i></p>
<p>Add underlined language as follows:</p> <p>m. <u>The most risk-averse approaches for minimizing the effects of sea level rise and storms are to discourage new development and remove existing development within areas vulnerable to inundation. However, many shoreline areas are already improved with development that has regionally significant economic, cultural or social value, or can accommodate infill development that will achieve regional goals for adding jobs and providing housing at densities that can be efficiently served by transit. This type of infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area. Infill development is the economic use of underutilized or vacant land, or restoration or rehabilitation of existing structures or infrastructure, in already urbanized areas where water, sewer, and other public services are in place.</u></p>	<p><i>The new finding was added to staff's revised preliminary recommendation to describe the range of potential human development responses to sea level rise and the inherent trade offs. It also defines infill development and summarizes its regional benefits.</i></p>
<p>Add underlined language as follows:</p> <p>m. <u>n. There are multiple local, state, federal, and regional government agencies with authority over the Bay and shoreline. Local governments have broad authority over shoreline land use, but limited resources to address climate change adaptation. Working collaboratively can optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty.</u></p>	<p>The new finding describes the patchwork of government authority over the Bay and shoreline. It further describes the difficult position of local governments in addressing climate change.</p> <p><i>The finding was re-lettered from l. to n.</i></p>

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Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p><u>o. Climate change impacts will occur on a regional scale. Government jurisdictional boundaries and authorities over the Bay and shoreline are incongruent with the scale and nature of climate-related challenges. A framework for regional decision-making to address climate change is needed. The Joint Policy Committee is comprised of regional agencies that collaborate to develop consistent and effective regionwide policy and local government assistance and incentives.</u></p>	<p>The new finding describes the need to provide a framework for decision-making that resembles the scale of climate change impacts, but retains a manageable scope.</p> <p><i>The finding was re-lettered from m. to o.</i></p>
<p><u>p. The Commission's current legal authority and regulatory jurisdiction, which were created to allow the Commission to advance the State goals of preventing unnecessary filling of the Bay and increasing public access to the Bay shoreline, limit the Commission's ability to successfully conserve the Bay and guide the wise development of the Bay and its shoreline in the face of current and future rates of sea level rise. However, through its Bay Plan policies the Commission can provide guidance to developers, the general public and other government agencies that have broader authority over the use and development of areas that are vulnerable to inundation.</u></p>	<p><i>The new finding was added to staff's preliminary recommendation to acknowledge that the challenges climate change presents to San Francisco Bay, and shoreline development cannot be successfully met by relying solely on the Commission's existing regulatory authority. It also acknowledges that the Commission can provide important guidance for development in low-lying areas outside of its jurisdiction.</i></p>
<p><u>g. The principle of sustainability embodies conducting current activities in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes..</u></p>	<p><i>A new finding was added in staff's revised preliminary recommendation to define sustainability, a term used in climate change policies.</i></p>
<p>Add underlined language as follows:</p> <p><u>1. Measures to address the future effects of climate change should use a risk-averse scenario of sea level rise that is regularly updated based on current scientific understanding. To minimize the adverse effects of sea level rise and storm activity on all projects and to guide the permitting of shoreline protection projects, the Commission should use this scenario to: (a) encourage new projects on the shoreline to be set back from the edge of the shore above a 100 year flood level that takes future sea level rise into account for the expected life of the project, or otherwise be specifically designed to tolerate sea level rise and storms and to minimize environmental impacts; (b) discourage new projects that will require new structural shoreline protection during the expected life of the project, especially where no shoreline protection currently exists; (c)</u></p>	<p><i>In staff's revised preliminary recommendation, this policy has been divided into new policies 1 and 3, and was revised to incorporate a more flexible approach to proposed development in low-lying areas that are vulnerable to inundation from sea level rise.</i></p>

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Policies	Staff Analysis
<p><u>determine whether alternative measures that would involve less fill or impacts to the Bay are feasible; (d) require an assessment of risks from a 100 year flood that takes future sea level rise into account for the expected life of the project; and (e) require that where shoreline protection is necessary, ecosystem impacts are minimized.</u></p>	
<p>Add underlined language as follows:</p> <p>1. <u>Sea level rise scenarios that include a conservative, high estimate, which are regularly updated based on current scientific understanding, should be used to develop measures for addressing the future effects of climate change. When planning the shoreline, designing a shoreline project, or regulating a proposed project along the shoreline, a risk assessment should be prepared based on the 100-year flood level that takes future sea level rise into account.</u></p>	<p><i>The new policy requires consideration of sea level rise scenarios and risks in the permit review process.</i></p>
<p>Add underlined language as follows:</p> <p>2. <u>The Commission, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional climate change adaptation strategy for creating resilient Bay and shoreline systems and increasing their adaptive capacity. The strategy should rely on an adaptive management approach, be updated regularly to reflect changing conditions and information, and include a map of shoreline areas that are vulnerable to flooding based on current sea level rise and shoreline flooding scenarios.</u></p> <p><u>The regional strategy 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.</u></p>	<p>The new policy provides guidance for developing and updating a regional strategy to adapt the Bay-related impacts of climate change. The policy suggests a framework is needed to organize multiple jurisdictions and allow for the type of adaptive planning that is necessary with a high degree of uncertainty, limited resources, and relatively rapid release of new scientific information.</p>

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<p>The goals of the strategy should be to:</p> <ol style="list-style-type: none"> a. <u>advance public safety and regional sustainability by protecting the shoreline environment with particular emphasis on existing shoreline development that provides regionally significant benefits and by protecting infrastructure that is critical to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, public access and major parks and recreational areas;</u> b. <u>protect enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) with particular emphasis on by identifying opportunities both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; managing adequate volumes of sediment for marsh accretion; developing and planning for natural flood protection; and maintaining sufficient upland buffer areas around tidal wetlands;</u> c. <u>integrate the protection of existing the shoreline environment development with the enhancement of the Bay ecosystem by emphasizing shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u> d. <u>identify a framework for integrating the adaptation responses of multiple government agencies;</u> e. <u>identify mechanisms for integrating mitigation and adaptation measures through the Joint Policy Committee;</u> f. <u>address environmental justice and advance community sustainability;</u> g. <u>support research that delivers useful information for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u> h. <u>identify actions to prepare and implement the strategy, including any needed changes in law; and</u> i. <u>identify mechanisms to provide information, tools, and financial resources to assist local governments to assist them with climate change adaptation planning.</u> 	<p><i>The proposed policy was revised to incorporate adaptive management as a guiding principle for the regional strategy; the need to identify areas where existing development should be protected, those areas where development should eventually be removed and those areas where the Bay should be allowed to migrate inland; to add sustainability as a criteria; to remove public access and add major parks as a strategy focus; to add "that provides regionally significant benefits as a qualifier for existing shoreline development; to clarify that developed and undeveloped areas should be considered for Bay migration areas; and to make other minor modifications to clarify the policy intent.</i></p>

Climate Change	
Policies	Staff Analysis
<p><u>Add underlined language as follows:</u></p> <p>3. <u>Until a regional sea level rise adaptation strategy can be completed, a precautionary approach should be used for planning and regulating new development in any area that is vulnerable to flooding. To ensure that any new development allowed in these areas will be both resilient to sea level rise and storm surge and minimize adverse environmental effects, any project larger than a minor repair of an existing facility except small projects that do not increase risks to public safety, whether within the Commission's jurisdiction or in a low-lying inland area under the jurisdiction of other agencies, should be limited to either:</u></p> <p style="margin-left: 20px;"><u>a. infill development within existing urbanized areas;</u></p> <p style="margin-left: 20px;"><u>b. natural resource restoration or enhancement projects;</u></p> <p style="margin-left: 20px;"><u>c. development that (1) will provide significant regional benefits and meet regional goals by concentrating employment or housing near existing or planned transit service sufficient to serve the project, and (2) includes the following elements: (i) an adaptation strategy for dealing with rising sea level and storms with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures that will achieve resilience and long-term environmental sustainability in all elements of the project; (iii) a permanent financial strategy that will guarantee the public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; and (iv) will not require Bay fill for structural shoreline protection at any time during the life of the project, especially where no shoreline protection currently exists; or</u></p> <p style="margin-left: 20px;"><u>d. development that is set back from the edge of the shore above the 100-year flood level that takes future sea level rise into account for the expected life of the project; or</u></p>	<p><i>The new policy describes an interim approach to authorizing development in low-lying areas, both within and outside of the Commission's jurisdiction. It requires and recommends that development in low-lying areas be limited to infill, natural resource restoration or enhancement, development providing significant regional benefits, development outside of low-lying areas, or projects in low lying areas that will not require future bay fill for shoreline protection to address future sea level rise.</i></p>

Climate Change	
Policies	Staff Analysis
<p>Add underlined language as follows:</p> <p>4. <u>Shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for natural resource enhancement that can allow for Bay habitat migration and will mitigate the adverse impacts of climate change should be protected or enhanced. These areas should be acquired to facilitate ecosystem restoration or protection.</u></p>	<p><i>The new policy provides that low-lying areas with diverse habitat values or those that are suitable for natural resource enhancement should be protected or enhanced, and where necessary, acquired for these purposes.</i></p>
Protection of the Shoreline Protection	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>a. <u>Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.</u></p>	<p>The new finding expands the use of the term "shoreline protection" to include flooding in addition to erosion and to include natural forms of shoreline protection in the description.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>a. b. Erosion control <u>Because vast shoreline areas are vulnerable to flooding and because much of the shoreline consists of soft, easily eroded soils, shoreline protection projects are often needed to protect reduce damage to shoreline property and improvements from erosion. Because so much shoreline consists of soft, easily eroded soils, protective structures are usually required to stabilize and establish a permanent shoreline. These structures</u> <u>Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.</u></p>	<p>The finding has been updated to reflect the broader use of the term "shoreline protection" by adding language about the need to reduce damage from flooding. The updated language clarifies the common types of structural shoreline protection by providing examples.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>b. c. Most erosion control <u>structural shoreline protection projects involve some fill, which can adversely affect natural resources such as water surface area and volume, tidal circulation, and wildlife use. marshes, and mudflats. Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, and create a barrier to physical and visual public access to the Bay, and may have cumulative impacts. As the rate of sea level rise accelerates and the potential for shoreline flooding increases, the demand for new shoreline protection projects will likely increase. Some projects may involve extensive amounts of fill.</u></p>	<p>The finding has been updated and significantly expanded to reflect new information regarding the full suite of impacts from structural shoreline protection.</p>

Protection of the Shoreline Protection	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>e. <u>d. Structural shoreline protection structures, such as riprap and sea walls, are</u> is most effective and less damaging to natural resources if they are <u>it is</u> the appropriate kind of structure for the project site and erosion <u>and flood</u> problem, and are <u>is</u> properly designed, constructed, and maintained. Because factors affecting erosion <u>and flooding</u> vary considerably, no single protective method or structure is appropriate in all situations. When a structure is not appropriate or improperly designed and constructed to meet the unique <u>site characteristics, flood</u> conditions, and erosion forces at a project site, the structure is more likely to fail, require additional fill to repair, have higher long-term maintenance costs because of higher frequency of repair, and cause greater disturbance and displacement of the site's natural resources.</p>	<p>The finding has been updated to incorporate flooding and to clarify the challenges accompanying structural shoreline protection projects.</p>
<p>Add underlined language as follows:</p> <p>e. <u>Addressing the impacts of sea level rise and shoreline flooding may require large-scale flood protection projects, including some that extend across jurisdictional or property boundaries. Coordination with adjacent property owners or jurisdictions to create contiguous, effective shoreline protection is critical when planning and constructing flood protection projects. Failure to coordinate may result in inadequate shoreline protection (e.g., a protection system with gaps or one that causes accelerated erosion in adjacent areas).</u></p>	<p>The new finding anticipates the desire for new and extensive shoreline protection as sea level rises and describes some of the issues that can arise where shoreline protection projects extend across jurisdictional and property boundaries.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>d f. Nonstructural erosion control <u>shoreline protection</u> methods, such as <u>tidal marshes</u> marsh plantings, <u>can provide effective flood control</u> but are typically effective <u>for erosion control</u> only in areas experiencing mild erosion. However, <u>In</u> some instances, it may be possible to combine marsh <u>habitat restoration</u> with structural approaches to <u>provide protection from flooding and</u> control shoreline erosion, thereby minimizing the erosion control <u>shoreline protection</u> project's impact on natural resources.</p>	<p>The finding has been updated to be consistent with the language used in other findings and to reflect current information regarding flood protection provided by tidal marshes.</p>

Protection of the Shoreline Protection	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>e.g. Loose dirt, concrete slabs, asphalt, bricks, scrap wood and other kinds of debris, are generally ineffective in halting shoreline erosion <u>or preventing flooding</u> and may lead to increased fill. Although providing some short-term shoreline protection, protective structures constructed of such debris materials typically fail rapidly in storm conditions because the material slides bayward or is washed offshore. Repairing these ineffective structures requires additional material to be placed along the shoreline, leading to unnecessary fill and disturbance of natural resources.</p>	<p>The finding has been updated to include flood protection.</p>
Policies	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>1. New shoreline erosion control <u>protection</u> projects and the maintenance or reconstruction of existing erosion control facilities <u>projects</u> should be authorized if: (a) the project is necessary to protect the shoreline from erosion <u>or to protect existing shoreline development from flooding</u>; (b) the type of the protective structure is appropriate for the project site, the uses to be protected, and the erosion <u>and flooding</u> conditions at the site; and (c) the project is properly <u>engineered to provide erosion control and flood protection for the expected life of the project based on a 100-year flood event that takes future sea level rise into account</u>; (d) the project is properly designed and constructed <u>to prevent significant impediments to physical and visual public access</u>; and (e) the protection is integrated with adjacent <u>shoreline protection measures</u>. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes should participate in the design.</p>	<p>The policy has been updated and expanded to reflect the potential need to provide protection from flooding due to sea level rise and storm activity. The update includes specific guidance regarding the circumstances for which a shoreline protection structure is allowable at a given location. General guidance on when a shoreline protection structure is allowable is included in Policies 1 and 3 of the proposed Climate Change section of the Bay Plan.</p> <p><i>In the revised staff recommendation, the word existing was added to modify development in subparagraph (a) to clarify that new development in areas that do not now have shoreline protection should not be authorized to place fill in the Bay in the future for shoreline protection.</i></p>

Protection of the Shoreline Protection	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>2. Riprap revetments, the most common shoreline protective structure, should be constructed of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revetment should be placed according to accepted engineering practice, and be free of extraneous material, such as debris and reinforcing steel. Generally, only engineered quarrrystone or concrete pieces that have either been specially cast, <u>are free of extraneous materials from demolition debris</u>, or carefully selected for size, density, <u>and durability</u>, and freedom of extraneous materials from demolition debris will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.</p>	<p>The policy has been updated to more clearly identify appropriate riprap materials.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>3. Authorized protective projects should be regularly maintained according to a long-term maintenance program to assure that the shoreline will be protected from tidal erosion <u>and flooding</u> and that the effects of the erosion control <u>shoreline protection</u> project on natural resources during the life of the project will be the minimum necessary.</p>	<p>The policy has been updated to incorporate shoreline flooding.</p>
<p>4. Shoreline protective <u>on</u> projects should include provisions for nonstructural methods such as marsh vegetation where feasible. Along shorelines that support marsh vegetation, or where marsh establishment has a reasonable chance of success, the Commission should require that the design of authorized protective <u>on</u> projects include provisions for the establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.</p>	<p><i>This policy was omitted from staff's original preliminary recommendation that was published on April 7, 2009 because staff proposed no changes to it. The Commission adopted the policy in 1989, and only minor changes are proposed. The policy was also included in response for clarification in response to comments.</i></p>
<p>Add underlined language as follows:</p> <p>5. <u>Adverse impacts to natural resources and public access from shoreline protection should be avoided. Where such significant impacts cannot be avoided, mitigation or alternative public access should be provided.</u></p>	<p>The new policy requires mitigation and/or the provision of alternative public access when adverse impacts to natural resources and/or public access from shoreline protection are unavoidable.</p> <p>In staff's revised preliminary recommendation, the word "such" was changed to significant to clarify that significant impacts must be addressed.</p>

Safety of Fills. The staff preliminarily recommends the Commission revise the findings and policies in the "Safety of Fills" policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan, especially those that the staff is not proposing to change, relate to the proposed changes is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Safety of Fills	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>f. Flood damage to fills and shoreline areas can result from a combination of <u>sea level rise, storm surge, heavy rainfall, high tides, and winds blowing onshore. The most effective way to prevent such damage, is to locate projects and facilities structures on fill or near the shoreline should be above the a highest expected water level 100-year flood level that takes future sea level rise into account, during the expected life of the project, or should be protected for the expected life of the project by Other approaches that can reduce flood damage include protecting structures with levees, of an adequate height seawalls, tidal marshes, or other protective measures and employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding, or float.</u></p>	<p>The finding was updated to be consistent with language in the proposed Climate Change section of the Bay Plan and to include new ideas for shoreline development that might accommodate rising waters levels.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>g. Bay water levels are likely to increase in the future because of a relative rise in sea level. Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting or subsidence) around the Bay. If historic trends continue, global sea level should increase between four and five inches in the Bay in the next 50 years and could increase approximately one and one half to five feet by the year 2100 depending on the rate of accelerated rise in sea level caused by the "greenhouse effect," the long-term warming of the earth's surface from heat radiated off the earth and trapped in the earth's atmosphere by gases released into the atmosphere. The warming would bring about an accelerated rise in sea level worldwide through thermal expansion of the upper layers of the oceans and melting of some of the earth's glaciers and polar ice packs. Sea level is rising at an accelerated rate due to global climate <u>Sea level is rising at an accelerated rate due to global climate</u></p>	<p>The finding has been revised to update and relocate substantial portions of text regarding climate change and sea level rise to the proposed Climate Change section of the Bay Plan.</p>

Safety of Fills	
Findings	Staff Analysis
<p><u>change</u>. Land elevation change caused by tectonic (geologic, including seismic) activity, consolidation or compaction of soft soils such as Bay muds, and extraction of subsurface groundwater or natural gas extraction, is variable around the Bay. Consequently, some parts of the Bay will experience a greater relative rise in sea level than other areas. <u>Relative rise in sea level is the sum of: (1) a rise in global sea level and (2) land elevation change (lifting or subsidence) around the Bay.</u> For example, in Sausalito, the land area has been gradually lifting while in the South Bay excessive pumping from underground fresh water reservoirs has caused extensive subsidence of the ground surface in the San Jose area and as far north as Dumbarton Bridge (map of Generalized Subsidence and Fault Zones shows subsidence from 1934 to 1967). Indications are that if heavy groundwater pumping is continued indefinitely in the South Bay area, land in the Alviso area (which has already subsided about seven feet since 1912) could subside up to seven feet more; if this <u>Where subsidence occurs, more extensive levees shoreline protection and wetland restoration projects</u> may be needed to <u>minimize prevent inundation flooding</u> of low-lying areas by the extreme high water levels.</p>	
Policies	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>3. To provide vitally-needed information on the effects of earthquakes on all kinds of soils, installation of strong-motion seismographs should be required on all future major land fills. In addition, the Commission encourages installation of strong-motion seismographs in other developments on problem soils, and in other areas recommended by the U.S. Coast and Geodetic <u>Geological</u> Survey, for purposes of data comparison and evaluation.</p>	<p>The policy has been updated to include the correct name of the U.S. Geological Survey.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>4. <u>Adequate measures should be provided</u> To prevent damage from sea level rise and storm activity flooding, that may occur <u>structures on fill or near the shoreline over the expected life of a project.</u> should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. As a general rule, The Commission may approve fill that is needed to provide flood protection for existing</p>	

Safety of Fills	
Policies	Staff Analysis
<p>projects. <u>New projects structures on fill or near the shoreline should either be above the wave runup level or sufficiently set back from the edge of the shore so that the project structure is will not be subject to dynamic wave energy, be built so in all cases, the bottom floor level of structures should will be above a the highest estimated tide 100-year flood elevation that takes future sea level rise into account for the expected life of the project, be</u> Exceptions to the general height rule may be made for developments specifically designed to tolerate periodic flooding, or employ other effective means of addressing the impacts of future sea level rise and storm activity. Rights-of-way for levees or other structures protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.</p>	<p>The policy has been updated for clarity and consistency with new language in other areas of the Bay Plan. The policy also makes it explicit that fill can be approved for shoreline protection—a practice in which the Commission has engaged for most of its existence, consistent with provisions in Section 66605 of the McAteer-Petris Act, which allow fill to establish a permanent shoreline, minimal amounts of fill to improve shoreline appearance, and fill for water-oriented uses.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>5. <u>To minimize the potential hazard to Bay fill projects and bayside development from subsidence, all proposed developments should be sufficiently high above the highest estimated tide level for the expected life of the project or sufficiently protected by levees to allow for the effects of additional subsidence for the expected life of the project, utilizing the latest information available from the U.S. Geological Survey and the National Ocean Service. Rights of way for levees protecting inland areas from tidal flooding should be sufficiently wide on the upland side to allow for future levee widening to support additional levee height so that no fill for levee widening is placed in the Bay.</u></p>	<p>The first part of the policy has been deleted and the last sentence of the policy has been moved to Policy 4. Proposed policy language in the Climate Change policy section and the Shoreline Protection section of the Bay Plan were inconsistent with the first part of this policy.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>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 or in areas that will become flood prone in the future, and that structures and uses that are approvable will be built at stable elevations to assure long-term protection from flood hazards.</p>	<p>The policy was deleted to reflect the current state of knowledge and commitment of local governments on the issue of climate change.</p> <p><i>In the revised preliminary staff recommendation this policy was retained, because it is still relevant and important.</i></p>

Tidal Marshes and Tidal Flats. The staff preliminarily recommends the Commission revise the findings and policies in the "Tidal Marshes and Tidal Flats" policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan, especially those that the staff is not proposing to change, relate to the proposed changes is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Tidal Marshes and Tidal Flats	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>g. The Baylands Ecosystem Habitat Goals report provides a regional vision of the types, amounts, and distribution of wetlands and related habitats that are needed to restore and sustain a healthy Bay ecosystem, including restoration of 65,000 acres of tidal marsh. These recommendations were based on <u>conditions of tidal inundation, salinity, and sedimentation in the 1990s. While achieving the regional vision would help promote a healthy, resilient Bay ecosystem, global climate change and sea level rise are expected to alter ecosystem processes in ways that require new, regional goals targets for types, amounts, and distribution of habitats.</u></p>	<p>The finding has been updated to reflect the currency of the Habitat Goals and the potential need to update them in light of new information regarding climate change.</p> <p><i>In Staff's revised preliminary recommendation "goals" was changed to "targets" to recognize that the approach used to develop the goals may no longer be appropriate and to provide greater flexibility in approaching this effort.</i></p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>i. Tidal marshes are an interconnected and essential part of the Bay's food web. Decomposed plant and animal material and seeds from tidal marshes wash onto surrounding tidal flats and into subtidal areas, providing food for numerous animals, such as the Northern pintail. In addition, tidal marshes provide habitat for insects, crabs and small fish, which in turn, are food for larger animals, such as the salt marsh song sparrow, harbor seal and great blue heron. <u>Diking and filling have fragmented the remaining tidal marshes, degrading the quality of habitat and resulting in a loss of species and an altered community structure.</u></p>	<p>The finding has been updated to include impacts from past activities that will affect the sustainability of tidal marshes as sea level rises.</p>
<p>Add underlined language as follows:</p> <p>k. <u>Landward marsh migration may be necessary to sustain marsh acreage around the Bay as sea level rises. As sea level rises, high-energy waves erode inorganic mud from tidal flats and deposit that sediment onto adjacent tidal marshes. Marsh plants trap sediment and contribute additional sediment from the accumulation of material. Tidal habitats respond to sea level rise by moving landward, a process referred to as transgression or migration. Low sedimentation rates, natural topography, development, and shoreline protection can block wetland migration.</u></p>	<p>The new finding describes the process of marsh migration—essential to sustain marshes as sea level rises—and further elaborates on the roles of plants and sediment in that process.</p> <p><i>In the revised preliminary recommendation, the first sentence was added to highlight the importance of wetland migration to the persistence of these habitats in the Bay. The word development was added to the last sentence because it can limit wetland migration.</i></p>

Tidal Marshes and Tidal Flats	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p><u>k l. Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. However, Scientists studying the Bay estimate that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to decline in the amount of sediment entering the Bay from the Sacramento and San Joaquin Delta is declining. As a result, the importance of sediment from local watersheds as a source of sedimentation in tidal marshes is increasing. As sea level rise accelerates, the erosion of tidal flats will may also accelerate, thus potentially exacerbating shoreline erosion and adversely affecting the ecosystem and the sustainability of future wetland ecosystem restoration projects. An adequate supply of sediment is necessary to ensure resilience of the Bay ecosystem as sea level rise accelerates.</u></p>	<p>The finding has been updated to reflect the most current information on sediment supply and how the supply is expected to be altered with climate change.</p> <p><i>In the revised preliminary staff recommendation, the word "will" was changed to "may" to reflect the local variability of sedimentation rates in the Bay.</i></p>
<p>Add underlined language as follows:</p> <p><u>m. Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the amount of sediment available to sustain and restore wetlands. Research on Bay sediment transport processes is needed to understand the volume of sediment available to wetlands, including sediment imported to and exported from the Bay. Monitoring of these processes can inform management efforts to maintain an adequate supply of sediment.</u></p>	<p>The new finding describes information that is needed to understand sediment transport and volumes in the Bay so that efforts can be made to effectively manage sediment supply.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p><u>l n. Buffers are areas established adjacent to a habitat to reduce the adverse impacts of surrounding land use and activities. Buffers also minimize additional loss of habitat from shoreline erosion resulting from accelerated sea level rise and allow them to move landward. Buffer areas may be critical for achieving the regional goals for the types, amounts, and distribution of habitats in the Baylands Ecosystem Habitat Goals report or future updates to these goals.</u></p>	<p>The new finding defines buffer areas, describes their current benefits, and highlights the need for them as space where marshes can migrate as sea level rises.</p>

Tidal Marshes and Tidal Flats	
Policies	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>4. Where and whenever possible, former tidal marshes and tidal flats that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife. As recommended in the Baylands Ecosystem Habitat Goals report, around 65,000 acres of areas diked from the Bay should be restored to tidal action <u>to maintain a healthy Bay ecosystem on a regional scale. The Baylands Ecosystem Habitat Goals Regional ecosystem targets should be updated periodically to establish conservation, restoration, and management targets efforts that result in a Bay ecosystem resilient to climate change and sea level rise.</u> Further, local government land use and tax policies should not lead to the conversion of these restorable lands to uses that would preclude or deter potential restoration. The public should make every effort to acquire these lands from willing sellers for the purpose of restoration <u>and wetland migration.</u></p>	<p>The policy has been modified to recommend periodic updates to the Habitat Goals report so that it reflects the effects of climate change on wetlands.</p> <p><i>In staff's revised preliminary recommendation, the policy has been modified to focus on developing new regional ecosystem targets, to encourage flexibility in the approach used to update the goals. Also the purpose of purchasing land to facilitate wetland migration was also added.</i></p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>5. <u>The Commission should support comprehensive Bay sediment research and monitoring to understand sediment volume necessary to sustain and restore wetlands. Monitoring methods should be updated periodically based on current scientific information.</u></p>	<p>The new policy recommends supporting sediment research and monitoring that can inform future management decisions on projects in the Bay, particularly wetland restoration projects.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>5 6. Any <u>ecosystem</u> tidal-restoration project should include clear and specific long-term and short-term biological and physical goals, and success criteria, and a monitoring program to assess the sustainability of the project. Design and evaluation of the project should include an analysis of: (a) the effects of <u>relative how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change;</u> (b) the impact of the project on the Bay's sediment budget; (c) localized sediment erosion and accretion; (d) the role of tidal flows; (e) potential invasive species introduction, spread, and their</p>	<p>The policy has been updated to expand on an existing requirement for analysis of restoration projects—incorporating current information on restoring resilient ecosystems—and to include new analysis of the potential for buffer areas for marsh migration where feasible.</p>

Tidal Marshes and Tidal Flats	
Policies	Staff Analysis
<p>control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; <u>(h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises;</u> and (j) site characterization. If success criteria are not met, appropriate corrective <u>adaptive</u> measures should be taken.</p>	

Public Access. The staff preliminarily recommends the Commission revise the findings and policies in the "Public Access" policy section as shown below.

More context on how other findings and policies in this section of the Bay Plan, especially those that the staff is not proposing to change, relate to the proposed changes is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml

Public Access	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>f. <u>Accelerated flooding from sea level rise and storm activity will severely impact existing shoreline public access, resulting in temporary or permanent closures. Periodic and consistent flooding would increase damage to public access areas, which can then require additional fill to repair, raise maintenance costs, and cause greater disturbance and displacement of the site's natural resources. Risks to public health and safety from sea level rise and shoreline flooding may require new shoreline protection to be installed or existing shoreline protection to be modified, which may impede physical and visual access to the Bay.</u></p>	<p>The new finding describes the range of impacts on public access from flooding from sea level rise and storm activity and identifies related issues, such as higher maintenance costs.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>h i. Public access areas obtained through the permit process are most utilized if they provide physical access, provide connections to public rights-of-way, are related to adjacent uses, are designed, improved and maintained clearly to indicate their public character, and provide visual access to the Bay. <u>Flooding from sea level rise and storm activity increase the difficulty of designing public access areas (e.g., connecting new public access that is set at a higher elevation or located farther inland than existing public access areas).</u></p>	<p>The finding has been updated to reflect the difficulties of designing public access in the face of sea level rise and related flooding.</p>

Public Access	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>k l. Studies indicate that public access may have immediate effects on wildlife (including flushing, increased stress, interrupted foraging, or nest abandonment) and may result in adverse long-term population and species effects. Although some wildlife may adapt to human presence, not all species or individuals may adapt equally, and adaptation may leave some wildlife more vulnerable to harmful human interactions such as harassment or poaching. The type and severity of effects, if any, on wildlife depend on many factors, including physical site configuration, species present, and the nature of the human activity. <u>Accurate characterization of current and future site, habitat and wildlife conditions, and of likely human activities, would provide information critical to understanding potential effects on wildlife.</u></p>	<p>The finding has been updated to recommend characterization of current and future wildlife habitats as they may be significantly altered by sea level rise and, thus, any impacts from public access on wildlife may be more serious than otherwise anticipated.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>I m. Potential adverse effects on wildlife from public access may be avoided or minimized by siting, designing and managing public access to reduce or prevent adverse human and wildlife interactions. Managing human use of the area may include adequately maintaining improvements, periodic closure of access areas, pet restrictions such as leash requirements, and prohibition of public access in areas where other strategies are insufficient to avoid adverse effects. Properly sited and/or designed public access can avoid habitat fragmentation and limit predator access routes to wildlife areas. In some cases, public access adjacent to sensitive wildlife areas may be set back from the shoreline a greater distance because buffers may be needed to avoid or minimize human disturbance of wildlife. Appropriate siting, design and management strategies depend on the environmental characteristics of the site, <u>and the likely human uses of the site, and the potential impacts of future sea level rise climate change.</u></p>	<p>The finding has been updated to reflect the need to site and design public access that is compatible with wildlife even as sea level rises and sites change.</p>

Public Access	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>5. <u>Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.</u></p>	<p>The new policy requires the creation of public access that will be resilient to sea level rise.</p>
<p>Add underlined language and delete struck-through language as follows:</p> <p>5 6. Whenever public access to the Bay is provided as a condition of development, on fill or on the shoreline, the access should be permanently guaranteed. This should be done wherever appropriate by requiring dedication of fee title or easements at no cost to the public, in the same manner that streets, park sites, and school sites are dedicated to the public as part of the subdivision process in cities and counties. <u>Any public access provided as a condition of development should be required to remain viable in the event of future sea level rise or flooding.</u></p>	<p>The policy has been updated to require that permit conditions for public access account for sea level rise. Since a permit requiring public access is recorded with the property document the public access is guaranteed for the life of the project even if sea level rises.</p>

Amendment Consistency with the McAteer-Petris Act

Section 66652 of the McAteer-Petris Act requires that amendments of the Bay Plan be consistent with the Findings and Declarations of Policy in the McAteer-Petris Act. The relevant Findings and Declarations of Policy sections of the McAteer-Petris Act are Section 66605 regarding fill in the Bay, Section 66602 regarding public access and Section 66632.4 regarding the Commission's authority to issue permits in the shoreline band.

Section 66605 of the McAteer-Petris Act states, in part: (a) the public benefits from fill must clearly exceed the public detriment from the loss of water areas, and fill should be limited to water-oriented uses, such as bridges; (b) no alternative upland location exists for the fill; (c) the fill should be the minimum amount necessary; (d) the fill should minimize harmful effects to the Bay including the water volume, circulation, and quality, fish and wildlife resources, and marsh fertility; (e) the fill should be constructed in accordance with sound safety standards. The McAteer-Petris Act broadly defines the term "fill" to include "earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods...." The updated findings and policies pertain to several types of fill.

The amendment will add a new climate change policy section to the Bay Plan that includes policies that require evaluation of sea level rise and storm activity for permit decisions regarding fill. The proposed policies anticipate future desire to place fill for shoreline protection and in areas that are vulnerable to flooding from sea level rise and provides guidance on the circumstances under which such fill is allowable, so that such fill is consistent with the provisions of Section 66605. Therefore, the portion of the amendment that proposes to add a new climate change section to the Bay Plan is consistent with Section 66605 of the McAteer-Petris Act.

The amendment will revise existing policies regarding protection of the shoreline, which currently addresses shoreline protection to minimize erosion. The proposed revisions to the findings and policies would expand the scope of the policy section to address flooding in addition to erosion, thereby anticipating again the future desire to construct additional shoreline protection or modify existing shoreline protection as sea level rises. The revisions encourage the use of natural shoreline protection, when feasible, and the minimization of harmful effects to the Bay so that fill for shoreline protection is consistent with Section 66605 of the McAteer-Petris Act.

The amendment further will revise existing policies in the Tidal Marsh and Tidal Flats policy section of the Bay Plan to improve the analysis of climate change impacts required for marsh restoration (which usually involves fill) so that marshes are more likely to sustain the impacts of climate change and adapt over time.

For all of the reasons above, the proposed amendment is consistent with Section 66605 of the McAteer-Petris Act.

Section 66632.4 of the McAteer-Petris Act applies within the Commission's shoreline band jurisdiction and allows that the Commission may only deny a permit for a project that: (1) fails to provide maximum feasible public access consistent with the project; or (2) conflicts with the use designated in a priority use area. The Commission can only condition a permit—require changes to the project—to bring the project into compliance with the requirement to provide maximum feasible public access and to be consistent with a priority use. Section 66602 of the McAteer-Petris Act states that existing public access to the shoreline and waters of San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided. A portion of this proposed amendment would revise the public access findings and policies. The policies would be updated to reflect the significant vulnerabilities of shoreline public access to flooding from sea level rise and the need to maintain and guarantee public access for the life of the project. The proposed amendment is therefore consistent with Sections 66602 and 66632.4 of the McAteer-Petris Act.

Environmental Assessment

The proposed amendment must meet the requirements of the McAteer-Petris Act and the Commission's standards for environmental review through an Environmental Assessment. Environmental Assessments are prepared in conformance with the Commission's regulations (CCR, Title 14, Section 11511-11512), which have been certified by the Secretary of Resources as functionally equivalent to the California Environmental Quality Act (CEQA). Because the proposed amendment is a programmatic policy change rather than a specific project with more precise quantifiable impacts, the discussion is more general in the background report entitled, *Living with a Rising Bay: Vulnerability and Adaptation in the San Francisco Bay and on its Shoreline*, than an environmental assessment for a specific project.

The proposed amendment addresses the need to update the sea level rise findings and policies that were created twenty years ago and to address other impacts caused by climate change. In the last twenty years, international scientific consensus has concluded that climate change is already occurring, that human activities that release greenhouse gases have caused climate change, and that some warming is inevitable no matter how much the world reduces greenhouse gas emissions. Scientists have already observed higher surface and ocean temperature, rising sea levels, and increased rates of ice melt. Most notably, scientists project that sea levels will continue to rise, long after greenhouse gas emissions are reduced. The background report incorporates the Environmental Assessment and is the fundamental basis of the staff report analysis and staff's recommended changes to the Bay Plan. Specifically, the staff background report provides an environmental assessment of the proposed amendment through: (1) analysis of the causes and effects of sea level rise and the use of scenarios for determining vulnerability; (2) analysis of shoreline vulnerability to flooding from sea level rise and storm activity; (3) analysis that identifies vulnerabilities in the Bay ecosystem to the effects of climate change; (4) analysis of vulnerabilities in Bay and shoreline governance; and (5) analysis of adaptation strategies that reduce vulnerabilities and increase resilience.

The resulting proposed revisions to the Bay Plan, as discussed in the background report and outlined in the proposed amendment to address climate change serve to update the Bay Plan to better reflect scientific understanding of climate change and sea level rise and to provide further guidance to minimize adverse impacts from climate change. Therefore, as described in the accompanying staff report, the proposed amendment will have no significant adverse environmental impacts.

Furthermore, the proposed amendment of the Bay Plan would not affect the Commission's ability to require specific environmental review of projects proposed in its jurisdiction under the provisions of the McAteer-Petris Act, the Bay Plan, the California Environmental Quality Act of 1970, and the Commission's federally-approved Management Program for the San Francisco Bay. Specific project review would require a more detailed level of environmental analysis than that required for a policy change to the Bay Plan, which is a general policy plan.

Summary of Written Comments Received

Amy Hutzel, State Coastal Conservancy, July 25, 2009. Staff response below corresponds to the state Coastal Conservancy's comment letter received on May 7, 2009.

Response to General Comments.

1. Comment noted.
2. Comment noted.
3. a. The staff report discussion on shoreline protection (pages 53-56 and pages 107-109) includes numerous citations of peer-reviewed literature that summarize the adverse impacts of hard-structure or static shoreline protection on the Bay ecosystem. This discussion reflects the input of BCDC staff's technical reviewers for this project, which included engineers, geomorphologists, hydrologists, coastal managers, and many other technical experts. Some of the impacts discussed include: the potential for increased erosion of adjacent tidal wetlands and erosion of the shoreline protection itself; cumulative impacts from Bay fill; restriction of marsh migration; loss of wave attenuation values of tidal marshes, which can further exacerbate flooding; and reflection of wave energy from seawalls that can undermine the base of structures and erode subtidal habitats. The substantial cost of constructing and maintaining static shoreline protection is also discussed along with the potential for static shoreline protection to create a false sense of security. The discussion concludes that static shoreline protection is a maintenance-intensive solution for the protection of shoreline development, public safety, and the ecosystem. However, the report also acknowledges that some development is critical to the region and must be protected. b. The Bay Plan protection of the shoreline findings currently defines shoreline protection as including soft shoreline protection because of an acute awareness of the adverse impacts of static shoreline protection and the great potential to use wetlands and other soft or natural features to provide shoreline protection. Finding f. in the shoreline protection policy section describes the benefits of using nonstructural shoreline protection, such as tidal marsh. The term shoreline protection in the Bay Plan should be interpreted to include this range of options. Protection of the shoreline policy 4 was inadvertently omitted from staff's original preliminary recommendation that was published on April 7, 2009. It is included here, and it requires that "soft" shoreline protection be incorporated into shoreline protection projects where feasible and marsh establishment has a reasonable chance for success. c. Finally, regarding the comment that the Commission may also wish to consider adding a policy statement or finding to emphasize the need for and potential for carbon sequestration, the combined findings on the effects of greenhouse gas emissions establish this need and climate change finding j. expressly states the carbon sequestration benefits of tidal wetlands.
4. The conclusions in the staff report are based on a thorough analysis and citation of the most relevant and current peer-reviewed literature as well as GIS analysis. The limits of both the literature and the GIS data are noted throughout the report. Regarding the GIS data, a thorough discussion of the limitations and applications of the data begins on page 23. The maps depicting areas vulnerable to sea level rise appear within the context of the discussion of these limits (directly after the data limitations are discussed). Furthermore, the maps in the staff report include text that states, "inundation data does not account for existing levees or other shoreline protection." The sea level rise maps posted on BCDC's website include a lengthy disclaimer about the data limitations because they are intended to be available as stand-alone maps that can be downloaded individually. The maps in the staff report appear within the context of a purposeful and explicit discussion about their limitations and, therefore, an additional statement or disclaimer on each map would be redundant. Regarding the comment that a caveat about the limitations of the inundation data should also be included in the Executive Summary, should the Executive Summary be issued as a stand-alone document, such a caveat would be included.
5. Greater flexibility on the form of an update to regional habitat goals is warranted. Changes are proposed to tidal marsh and tidal flat finding g. and policy 4 to provide greater flexibility on the form of the periodic update.
6. Comment noted.

7. The word Bay has been added as a modifier before ecosystem in the finding.
8. Bay Plan findings generally do not include footnotes. However, the literature cited in the background report that projects the increasing frequency of storm activity and extreme tides is Cayan et. al. 2008(a). In general, the frequency of El Niño events is not fully understood and the relationship of El Niño events to global climate change is also not well understood. The proposed finding was modified to strike the phrase "which are becoming more frequent."
9. The term residences has been removed from the proposed finding.
10. The Bay Plan subtidal policies adequately provide for protecting Bay subtidal habitats, which includes eelgrass beds--an important part of the Bay ecosystem. Subtidal policy 2 expressly identifies eelgrass beds as a scarce habitat type in the Bay that should be conserved, and prohibits projects that would disturb these habitats, unless there is no feasible alternative, and the project provides substantial public benefits.
11. There is insufficient information to substantiate the adverse effect of structural shoreline protection on eelgrass beds. However, the protection of eelgrass beds is assured in the proposed climate change and shoreline protection policies, which would require, in part, that: "in undeveloped areas, projects that will not require Bay fill for structural shoreline protection at any time during the life of the project, especially where no shoreline protection currently exists (Climate Change, Policy 3(e));" and "adverse impacts to natural resources...should be avoided (Shoreline Protection, Policy 5)." As noted in response to comment 8 above, Policy 2 in the Bay Plan Section on Subtidal Area ensures protection of subtidal habitats, such as eelgrass beds.
12. There is insufficient scientific information to substantiate the degree to which eelgrass beds in San Francisco Bay can provide wave attenuation or other flood protection benefits.
13. The Bay Plan section on terms, page 10 states, "As used in this plan, should is mandatory."
14. The Bay Plan section on terms, page 10 states, "As used in this plan, should is mandatory."
15. Proposed climate change finding g. states, in part, that "adaptation actions can include moving structures outside of flood and inundation zones, protecting shorelines, or designing new construction to be resilient to sea level rise." Language was added to proposed finding g. stating "many adaptation strategies are untested, particularly those that are intended to be effective in a dynamic estuary. Expanding the range of effective adaptive strategies will require innovation, testing and refinement." Revisions to the proposed climate change findings and policies include a new finding m. that states, in part, that, "the most risk-averse approaches for minimizing the effects of sea level rise and storms are to discourage new development and remove existing development within areas vulnerable to inundation." The proposed Bay Plan changes adequately characterize adaptation as a range of possible strategies, not limited to shoreline protection.
16. Please see response to comment 1.
17. Climate change policy 1 in the original preliminary recommendation has been split into two policies in the revised preliminary recommendation, policies 1 and 3, and substantially modified. The revised policy 3 in conjunction with other policy amendments and existing Bay Plan policies provide clear direction to minimize adverse effects to natural shoreline processes and the Bay ecosystem.
18. A succinct statement about the need to accommodate marsh migration is needed in the findings and a change similar to that suggested has been made to proposed tidal marshes and tidal flats finding k. The word "development" has been added after "natural topography."
19. Please see response to comment 3.
20. Several other Bay Plan sections call for additional research to improve the information available to the Commission and the public, such as public access and subtidal habitats. Because the Bay Plan is organized topically, research priorities are identified consistent with this structure.

21. The suggested text, "and wetland migration," has been added to the end of the Policy 4, Tidal Marshes and Tidal Flats. Also, proposed policy 4 in the climate change section states, in part that "shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for natural resource enhancement that can allow for Bay habitat migration ... should be protected or enhanced."
22. The phrase, "sea level rise" has been changed to "climate change," which is more inclusive.
23. The State Coastal Conservancy and Santa Clara Valley Water District will be cited in the report. The report includes a sidebar that discusses the adaptive management approach used in the South Bay Salt Pond Restoration Project. The report will be changed to credit the agencies leading the South Bay Salt Pond Restoration Project in a footnote within the sidebar.
24. Invasive species are discussed under a subheading in Chapter 3 of the report. Where the increase of invasive species would result from a project proposal, the Commission already has policy guidance. However, there is very limited peer-reviewed scientific information regarding invasive species trends in San Francisco Bay, e.g., studies pointing to an increase in invasive species from a project proposal that would be further exacerbated by impacts from climate change. The invasive species discussion in Chapter 3 of the report will be revised to more accurately distinguish between invasives, exotics and migrating endemics with examples of each and the implications for the Bay ecosystem. Given the dearth of research in this area, BCDC staff is limited in its response.
25. The staff report includes considerable information supporting comprehensive Bay sediment research and management. In addition to the discussion in Chapter 3, Chapter 5 includes a detailed discussion of the need for regional sediment management (ps. 148-9) as an adaptation strategy. Some additional language will be added to Chapter 3 to better link the sediment discussion there with the strategy called for in Chapter 5.
26. Staff appreciates the offers to support and collaborate with BCDC on implementing adaptation strategies to protect San Francisco Bay.
27. BCDC staff recently published a report evaluating varying potential legal interpretations of how the Commission's jurisdiction may be modified or interpreted, if Bay water levels rise and the shoreline migrates upland. See legal analysis under "Briefing on Climate Change and the Public Trust Doctrine" at http://www.bcdc.ca.gov/meetings/commission/2009/03-05_agenda.shtml. See also response to Comment 39 from Save the Bay and also see the Commission's strategic plan at <http://www.bcdc.ca.gov>.
28. Comment noted.



Coastal Conservancy

May 07, 2009

Leslie Lacko
Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

RE: State Coastal Conservancy (Conservancy) comments on the Bay Conservation and Development Commission (BCDC) Draft Staff Report, *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline*, and Preliminary Recommendation for Proposed Amendment 1-08 to the San Francisco Bay Plan

Dear Ms. Lacko,

On behalf of the Conservancy, I would like to thank you for the opportunity to provide comments on the Draft Staff Report and Preliminary Recommendation for Proposed Amendment 1-08 to update the San Francisco Bay Plan findings and policies to address climate change. The Conservancy applauds BCDC's proactive approach to addressing the unavoidable impacts from global warming that will affect the Bay and the shoreline. We commend you for taking action to amend the San Francisco Bay Plan to reflect what we know about the changing climate, rising sea levels, the likelihood for increased storms and flooding, and the corresponding likely impacts to critical infrastructure, public safety, and the Bay ecosystem.

While the Conservancy as an agency does not have regulatory authority over the Bay or shoreline, we are committed to protecting and restoring the Bay and its surrounding tidal wetland and upland habitats and watersheds, and have invested tens of millions of dollars to fund projects that do so to carry out our enabling legislation and mission. We are also tasked with ensuring public access to the Bay and the coast by providing funding, technical expertise and coordination with partners, such as BCDC, to construct and maintain the Bay Trail, Coastal Trail, and Water Trail. As such, we have reviewed the proposed Bay Plan amendments with an eye towards protecting and restoring the Bay ecosystem, including the sub-tidal, tidal, and inter-tidal areas, and adjacent upland areas, and ensuring public access to the Bay to the maximum extent practicable. The Conservancy currently leads and/or funds many of the wetland restoration efforts around the Bay, including the South Bay Salt Ponds, Hamilton and Bel-Marin Keys, and Napa Marsh that are critically important to creating a resilient Bay ecosystem with rising sea levels and a changing climate. We look forward to continuing to work with BCDC on future projects that will help the Bay to become more resilient to anticipated changes in climate and sea level rise.

1330 Broadway, 13th Floor

Oakland, California 94612-2512

510-286-1015 Fax: 510-286-0470

Our comments below are organized into three categories: (1) general and overall comments; (2) specific language suggestions on the proposed Finding and Policy amendments; and (3) comments on the Draft Staff Report. We welcome the opportunity to discuss our ideas and suggestions with you in more detail.

2

I. General and Overall Comments

As stated above, we are very supportive of the proposed amendments to the Bay Plan to reflect anticipated rises in sea level and other impacts resulting from global warming. We do, however, have concerns about a few key issues raised in the proposed amendments and Draft Staff report.

First, the language used in the proposed amendments and Draft Staff report to discuss shoreline protection seems to down play and discount the known adverse impacts of hard structure shoreline protection devices on the Bay ecosystem and natural shoreline processes. Furthermore, some of the proposed language does not differentiate between “soft” (wetlands) and “hard” (structural) shoreline protection. We recommend that, where feasible the Commission prioritize soft or non-structural shoreline protection (i.e. tidal wetlands and eelgrass beds) over hard or structural protections (i.e. sea walls, rip-rap, berms) and add a policy to the other proposed amendments to address this issue (see Section II, no. 6 below). Along those lines, we suggest that the Commission may also wish to consider adding a policy statement or finding in either the Climate Change or Shoreline Protection section to emphasize the need for multi-objective projects, such as restoring tidal wetlands for flood protection, habitat benefits, and the potential for carbon sequestration.

3a

3b

3c

Second, regarding the maps and data used to describe likely impacts of sea level rise, we appreciate the effort that went into conducting the vulnerability analysis to facilitate an evaluation of impacts; however, we are concerned that as presented the report implies a greater level of accuracy about inundation impacts than is warranted given the data limitations of the analysis. As such, we recommend that each map include a statement regarding the limitations of the data used to conduct the analysis, that they are meant to be illustrative and not a finite prediction of future inundation with sea level rise, and that that the maps are based on inundation data that does not account for existing levees or other shoreline protection. A caveat about the limitation of the inundation data should also be included in the Executive Summary of the Draft Staff report.

4

Third, the Conservancy agrees that the wetland conservation priorities established in the San Francisco Baylands Ecosystem Habitat Goals Report (Habitat Goals) need to be revisited to address changing wetland conservation priorities in light of climate change and sea level rise. We suggest, however, that Commission consider requiring periodic updates in wetland conservation and restoration goals separate from Habitat Goals (see suggested language changes in Section II, no. 9 below) because the conservation targets set out in Habitat Goals were based on species habitat requirements rather than ecosystem based management. In light of preliminary climate change research findings regarding predicted changes in species composition and community dynamics, we recommend setting wetland conservation and restoration goals under a different framework that is not solely tied to the habitat requirements of specific species.

5

Updating these goals could take the form of an addendum to the Habitat Goals document to address new challenges in the face of climate change or become a separate document. We believe it would be beneficial for the Commission to have some flexibility in setting wetland conservation goals in lieu of tying all future wetland conservation and restoration priority setting exercises to Habitat Goals.

5

Finally, it would greatly benefit the readers of both documents - Proposed Bay Plan Amendment 1-08 and Draft Staff Report - to add references in the "Staff Analysis" column of the table showing the proposed amendments that explicitly state what sections of the background report relate, correspond, or explain the proposed changes to the findings and policies of the Bay Plan in further detail. We understand that *Living with a Rising Bay* is meant as background to the Bay Plan amendments and it would be helpful to correlate the proposed Bay Plan amendments to the sections in the report that address and/or discuss those issues.

6

II. Specific Changes to Proposed Findings and Policies Amendments

1.) Page 3, Climate Change Findings c. - suggest adding "Bay" before "ecosystem" in the sentence that starts: "The Commission is responsible for protecting..."

7

2.) Page 4, Climate Change Findings e. - suggest adding a footnote to cite research showing El Nino years are becoming more frequent.

8

3.) Page 5, Climate Change Findings h. - suggest removing "residences" from the proposed underlined language. The way the language reads, it suggests that all shoreline residences are critical to public health and the region's economy. The term "development" itself includes residential development. In this finding, the Conservancy is concerned that calling out residences could be interpreted as elevating the need to protect residences through structural shoreline protection versus consideration of all viable adaptation options for addressing flood risks from sea level rise.

9

4.) Eelgrass beds should be added to the types of habitats that should be protected in the Bay ecosystem and for non-structural shoreline protection. Research has shown that eelgrass beds can serve to attenuate waves during storms and reducing flooding. Suggested changes for language occur on:

10

Page 8, Climate Change Policies b. - add "eelgrass beds" after "tidal wetlands"

Page 9, Shoreline Protection Findings c. - add "harm eelgrass beds and" after "Structural shoreline protection can"

11

Page 10, Shoreline Protection Findings f. - add "eelgrass beds" after "tidal marshes"

12

5.) Consider using more definitive language where appropriate and consistent with McAteer-Petris Act, such as on Page 7, Climate Change Policies 1. - suggest changing "should" to "shall" in the second sentence starting "the Commission", and on Page 12, Shoreline Protection Policy 5, change "should" to "shall" in the second sentence "Where such impacts cannot be avoided. ..."

13

14

- 6.) Page 9, Shoreline Protection Findings, we suggest adding language to clarify that well designed shoreline protection is one of many possible adaptation options to prevent damage from flooding. We support adding language to set forth principles to be used when evaluating possible adaptation options for shoreline development, and to link individual decisions regarding shoreline protection to implementation of a regional adaptation plan as much as possible. We also suggest adding a policy to the Shoreline Policy section that encourages use of natural shoreline protection such as tidal wetlands, mudflats, and eelgrass beds over hard shoreline protective devices such as sea walls, rip-rap revetments or berms, where feasible. 15
- 7.) Page 11, Shoreline Protection Policies 1. – suggest adding an additional element (f) as follows: “... and (f) the project is designed to minimize adverse impacts to natural shoreline processes and the Bay ecosystem.” 16
- 8.) Page 16, Tidal Marshes and Tidal Flats k. – suggest adding language from the Staff Analysis column to this finding or create a new finding with language that states: “Landward marsh migration is a key component to sustain marsh acreage around the Bay as sea level rises.” Also suggest adding language to the last sentence of this finding so that it states: “Low sedimentation rates, natural topography, development, and shoreline protection can block limit wetland migration and persistence.” 17
- 9.) Page 18, Tidal Marshes and Tidal Flats 4. – suggest deleting “The Baylands Ecosystem Habitat Goals report” and “to establish” from the proposed amendment and add “The Commission should support” so that the amended language reads: “The Commission should support periodic updates to conservation, restoration, and management targets that result in....” See rationale regarding Baylands Ecosystem Habitat Goals report discussed in Section I above. 18
- 10.) Page 18, consider expanding the research needs discussed in the proposed Policy 5 beyond sediment research and monitoring to include other areas of research that would benefit BCDC land use decisions with respect to sea level rise and climate change, including research priorities outlined in BCDC’s white paper to the California Energy Commission. 19
- 11.) In that same policy (Page 18, Tidal Marshes and Tidal Flats 4.) we recommend adding additional language to the last sentence of the policy so that it reads: “The public should make every effort to acquire these lands and adjacent upland areas from willing sellers for the purposes of restoration and wetland transgression (landward marsh migration).” 20
- 12.) Page 20, Public Access, Findings m. – suggest adding “and climate change” at the end of what is proposed for the amendment. This would reflect the fact that sea level rise is not the only factor that could force species to migrate; changes in temperature and precipitation could also force wildlife species to move inland in ways that could conflict with public access. 21

III. Comments on Draft Staff Report, *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline*

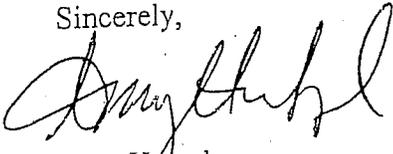
In addition to our general comments regarding the proposed amendments and Draft Staff report in Section I above, we have some additional comments on *Living with a Rising Bay*.

- 1.) Consistently acknowledge entities that play significant roles in projects or planning efforts cited in the report. Currently the report acknowledges significant contributions of some entities and not others. For example, a reference to the South San Francisco Bay Shoreline Study on page 121 notes that the U.S. Army Corps of Engineer is conducting the project. The Corps is one partner in a cost share agreement that also includes the Conservancy and the Santa Clara Valley Water District. On page 116 and in Box 5.1 on page 137, the agencies leading the South Bay Salt Pond Restoration Project should be named: the U.S. Fish and Wildlife Service, California Department of Fish and Game, Conservancy, Santa Clara Valley Water District, and Alameda County Flood Control and Water Conservation District. Another example would be acknowledging the Conservancy's significant work as lead in the ambitious bay-wide program to control introduced species of *Spartina*. 23
- 2.) Regarding invasive species, managing and controlling invasive species should be added to the list of key issues that resource managers need to address in the Summary and Conclusions section of Chapter 3 on page 18 as it is already highlight and discussed as key issue in that chapter of the report. 24
- 3.) Regarding sediment management, the report acknowledges that sediment loss is a serious concern, given the need for sediment in order to assist marsh accretion and transgression as sea level rises. We recommend strengthening the rationale for the need to implement management options to support desired sediment supplies to targeted habitats and regions. 25
- 4.) We support and acknowledge the suggested strategies for adaptation in Chapter 5 and summarized in table on pages 153-54. The Conservancy is prepared to support BCDC and/or lead efforts that may assist in implementing strategies where we are well qualified and able to do so, for example, purchasing development rights along the shoreline, assisting with implementing multi-objective public access projects, and in general, protecting the Bay. 26
- 5.) What is the status and process for determining how sea level rise will impact BCDC's jurisdiction? When does the BCDC anticipate making a legal determination on this or will legislation need to be pursued to resolve this? 27

Again, we thank you for this opportunity to provide comments on the proposed Bay Plan amendments and Draft Staff report. The Conservancy hopes that the Commission will consider these comments as you move toward adopting new policies and findings for the Bay Plan and we look forward to discussing our ideas with you should there be an opportunity to do so. Please contact Michelle Jespersion, Climate Change Representative in the San Francisco Bay Area Conservancy Program at 510-286-7148 or mjesperson@scc.ca.gov if there are questions.

28

Sincerely,



Amy Huzel
Program Manager

John Bruno, Redwood City Salt Works, May 6, 2009. Staff response below corresponds to the Redwood City Salt Works comment letter received on May 7, 2009.

1. Comment noted.
2. The Commission extended the public hearing until June 4, 2009, and again to July 16, 2009, when the public hearing was closed. The Commission will hold a public hearing on November 5, 2009 to consider staff's revised preliminary recommendation.
3. Climate Change policy 1 was split into two policies in the revised staff preliminary recommendation: new policy 1 which requires use of sea level rise scenarios to evaluate risk to public safety for development in low-lying areas, and policy 3 which establishes a framework for evaluating projects in low-lying areas in the interim period before a regional sea level rise adaptation strategy is developed. The policy includes a suite of criteria that should be used to evaluate proposed projects in conjunction with other relevant policies in the Bay Plan. Policy 3 differs from policy 1(b) in the original preliminary recommendation because it suggests that under certain conditions, development in potentially vulnerable areas could proceed. The policy also recognizes that some development in potentially vulnerable areas may have other benefits or be designed to minimize adverse impacts. As such, the revised policy is expressly written to protect public safety and the ecosystem.
4. The suggested policy addition would be redundant with other similar statements in Part I of the Bay Plan that encourage wise development of the Bay and its shoreline, consistent with the Bay Plan policies. The Bay Plan is intended to be read as a whole when evaluating project proposals, and the proposed policy could create confusion about how to apply or reconcile policies in the plan.



May 6, 2009

Will Travis
Executive Director
SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
50 California Street, Suite 2600
San Francisco, California 94111

Re: Draft Staff Report and Preliminary Recommendations for Proposed Bay
Plan Amendment 1-08 Concerning Climate Change

Mr. Travis,

We appreciate the opportunity to submit comments on the San Francisco Bay
Conservation and Development Commission (BCDC) Draft Staff Report and Preliminary
Recommendation for Proposed Bay Plan Amendment 1-08 Concerning Climate Change
(Amendments), which the Commission is scheduled to consider on May 7, 2009. We
commend BCDC's vision and leadership in addressing the vital issue of climate change,
especially as related to strategies to address sea level rise in the Bay Area.

1

Request for Continued Period of Public Review and Comment

As a preliminary matter, given the complexity and importance of the issues, we
believe that a limited amount of additional time is necessary to review and solicit public
comment regarding these strategies. In addition to our comments on proposed Policy
1(b) below, which are submitted for your review, we request that the Commission defer
consideration of the Amendments for sixty (60) days to allow for greater public dialogue
around the critical issue of sea level rise in the Bay Area.

2

Proposed Policy 1. (b)

As we continue our overall review of the Draft Staff Report, we appreciate what
we perceive to be an objective to incentivize beneficial shoreline projects consistent with
the Bay Plan. We are concerned, however, that at least in one instance an across-the-
board presumption has the potential to negatively impact what are substantively
beneficial projects in furtherance of your overall objectives in the Amendments.
Specifically, proposed Policy 1. (b) provides:

3

"[T]he Commission should . . . (b) discourage new projects
that will require new structural shoreline protection during
the expected life of the project, especially where no
shoreline protection currently exists;" (Draft Staff Report,
pg. 7.)

The proposed Policy arguably establishes a blanket presumption against the use of
structural shoreline protection strategies for new projects, but does not establish a



Will Travis
May 6, 2009
Page 2

framework for determining when structural shoreline strategies are appropriate or, indeed, beneficial to the ends sought in the Amendments. By taking a categorical approach, rather than allowing the appropriate shoreline protection strategy to be matched to fact-specific circumstances, the Policy disfavors new projects requiring structural protection that could also: (1) protect existing vulnerable populations and infrastructure; (2) increase population densities and promote sustainable, less greenhouse-gas-producing communities; and (3) integrate structural and nonstructural shoreline protection strategies.

3

In order to ensure full consideration of the merits of a given project proposal, we ask that Policy 1. (b) be deleted in its entirety from the proposed Amendments. Alternatively, at a minimum, we ask the Commission and staff to consider the following amendment to the proposed Policy:

"[T]he Commission should . . . (b) discourage new projects that will require new structural shoreline protection during the expected life of the project, except for projects that increase protection and are otherwise consistent with the Bay Plan. ~~especially where no shoreline protection currently exists;~~"

Similarly, we ask the Commission and staff to consider an additional "catch all" policy that would clarify one of the very appropriate intents of the Amendments, i.e., to *encourage* beneficial and protective projects relative to the threats posed by climate change. To that end, we propose the following language be added to the Amendments:

4

"None of the policies contained in this Part IV are intended to discourage projects that provide an affirmative benefit in terms of shoreline protection and defense against the impacts of climate change and are otherwise consistent with the Bay Plan."

We very much appreciate the opportunity to comment and your consideration of (1) our request to keep the public comment period open for further consideration of this important topic and proposal, and (2) the specific language suggestions on both proposed Policy 1. (b) and the clarifying "catch all."

Sincerely,



John P. Bruno
Vice President and General Manager
DMB REDWOOD CITY SALTWORKS

John Martin, San Francisco International Airport, May 14, 2009. Staff response below corresponds to the San Francisco International Airport's comment letter received on May 18, 2009.

1. Comment noted. A subsequent letter from the San Francisco International Airport was received with proposed changes to the background report, many of which will be incorporated into the revised report.



San Francisco International Airport

P.O. Box 8097
San Francisco, CA 94128
Tel 650.821.5000
Fax 650.821.5005
www.flysfo.com

May 14, 2009 RECEIVED
MAY 18 2009

SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

Mr. Will Travis
Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

AIRPORT
COMMISSION
CITY AND COUNTY
OF SAN FRANCISCO

Subject: Climate Change and Sea-Level Rise in San Francisco Bay

Dear Will:

GAVIN NEWSOM
MAYOR
LARRY MAZZOLA
PRESIDENT
LINDA S. CRAYTON
VICE PRESIDENT
CARYL ITO
ELEANOR JOHNS
RICHARD J. GUGGENHIME
JOHN L. MARTIN
AIRPORT DIRECTOR

Thank you for sending the Draft Staff Report, *Living With a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline* (April 7, 2009), for review and comment. My staff has reviewed the report, and we do not agree with some of the conclusions, most notable that 72% of Airport land is vulnerable to a 16" rise in sea levels by 2050. We do, however, concur that protection of runways at both SFO and OAK should be a high regional priority given the role of air transportation in the regional economy. Currently, our most vulnerable areas are not Airport property, i.e., Coast Guard, etc., which will need a regional approach. Our own dike design supports almost a 36" rise in the highest high tides and, with your aid during the permitting process to accommodate any gaps in our program, we should be able to safeguard any flooding of the airfield for the next 50 years.

We appreciate your recent visit with the Dutch climate change consortium to start a dialogue on how to address the long term challenges associated with rising sea levels. SFO looks forward to continuing to work with BCDC and other stakeholders to consider regional approaches to regional issues.

Very truly yours,

John L. Martin
Airport Director

cc: Leslie Lacko, BCDC

Barbara Salzman, Marin Audubon Society, May 7, 2009. Staff response below corresponds to Marin Audubon's comment letter received on May 7, 2009.

1. Substantial areas along the Bay shoreline are at risk from inundation due to sea level rise. Discouraging development of all areas at risk of inundation would provide a blanket solution that may not be appropriate for projects designed to minimize risk. Whether or not a project involving Bay fill should be discouraged should be determined by the Commission on a project-by-project basis that accounts for a variety of factors. Proposed climate change policies 1, 3 and 4 would add criteria that should be used in evaluating projects in vulnerable areas. Policy 4 is intended to ensure that undeveloped shoreline areas are available for habitat protection, enhancement or migration. See response to Comment No. 19.
2. In the proposed revisions to the Shoreline Protection section, in finding d and policy 6, the term "appropriate" is existing language that is used to describe shoreline protection that is appropriate to specific site conditions, such as erosive soils or other site conditions. Since it is impossible to predict the range of projects that may come before the Commission, the term "appropriate" is used only with reference to certain conditions and is, therefore, not open to broad interpretation. The word appropriate is used as modifier in at least eleven policy sections in the Bay Plan both in the conservation and development sections of the plan. The term is used to guide the Commission in the exercise of its discretion, and not to specifically define sets of circumstances, but to guide the Commission to take those circumstances into account when making its determinations.
3. The value of transition zones and buffers extend beyond protection of single species and endangered species, and benefit many species and adjoining habitats. The tidal marsh and tidal flats findings and policies provide information about the habitat benefits and protection of transition and buffer zones and make specific reference to their benefits to endangered species.



COPY

Marin Audubon Society

P.O. Box 599 | MILL VALLEY, CA 94942-0599 | MARINAUDUBON.ORG

May 7, 2009

Sean Randolph, Chair
Bay Conservation and Development Commission
50 California Street
San Francisco, CA 94911

RE: Proposed Bay Plan Amendment No. 1-08

Dear Chairman Randolph and Commissioners:

The Marin Audubon Society strongly supports the Commission's efforts to address sea level rise and commend staff for its forward thinking approach to this critical problem. We have observed first hand local communities inability to deal with sea level rise issues. We are particularly supportive of the policies that recognize the need to protect wetlands and adjacent transition/buffer zones. Such policies are critical to the recommended policies. We urge adoption of the proposed policies with a few recommendations:

- Include wording that discourages development of undeveloped shoreline areas where there would be a risk of inundation and/or where there is an opportunity to provide transition/buffer zones, or to restore wetlands. This is the safest and most environmentally sound approach. 1
- The word "appropriate" is used in a number of policies. For example, Finding d, speaks to appropriate structures for flood protection, proposed policy 1 speaks to protective structures appropriate for the structures, and policy 6 which addresses appropriate buffers. These references are open to various interpretations because appropriate is not defined. We are interested in clarifying that the method of choice not be riprap or other structure, but the environmentally wide transition/buffers. 2
- Add language to the policies addressing buffers that recognizes the importance of buffer/transition zones to endangered species, particularly clapper rail and harvest mouse. 3

We believe the wildlife and people residents of the Bay Area will greatly benefit by the Commission's assumption of jurisdictional responsibility in this important area.

Sincerely,

Barbara Salzman
President

David Lewis, Save the Bay, May 7, 2009. Staff response below corresponds to Save the Bay's comment letter received on May 7, 2009.

1. Comment noted.
2. At its June 4, 2009 public hearing on this amendment, the Commission considered whether to seek additional interim authority over vulnerable low-lying areas while it pursued developing a regional adaptation strategy. The Commission decided to proceed with the public hearings and complete its work on the current proposed amendments to the Bay Plan, commence the development of a regional strategy in partnership with other agencies and the public, and then develop proposed legislation to address climate change on a more comprehensive regional basis, based on the outcome of the collaborative planning process.
3. Staff believes that the proposed amendments, including the proposed regional strategy address the urgency of sea level rise. Please also see responses to comments 2 and 4.
4. The policies in the proposed Climate Change section would apply in salt ponds and managed wetlands and all other areas within the Commission's jurisdiction. The staff reviewed the Salt Ponds and Managed Wetlands sections of the Bay Plan and determined that the proposed Climate Change policies do not conflict with existing policies in those sections.
5. Finding m. was re-lettered to be finding o. in the revised preliminary recommendation, but no changes were made to it. While BCDC may be the agency best positioned to lead the development of a sea level rise adaptation strategy, the necessary regional mitigation and adaptation responses to climate change extend far beyond adapting to sea level rise. A regional plan to adapt to sea level rise must be integrated with other regional efforts to mitigate climate change and adapt to other impacts, such as increasing temperatures, drought, increased fire risk, and public health risks. The Joint Policy Committee is already coordinating other regional efforts and best suited to continue performing this coordinating role, which would not diminish the Commission's leadership on this issue. Finding p was added to clarify how the policy changes in this amendment can be used by other jurisdictions to address sea level rise.
6. See response to comments 4, and response number 3 to John Bruno's May 6, 2009 letter and response 21 to the State Coastal Conservancy's May 7, 2009 letter. Regarding proposed changes to policy 1, see responses to Comments Nos. 28 and 19. Policy 1 was modified, and some of it included in a proposed policy 3, which includes criteria for evaluating development proposals in low-lying areas. Criteria (ii) in this revised policy generally addresses the proposal, and when read in conjunction with other Bay Plan policies, such as Tidal Marsh and tidal Flats, Fish, Wildlife and Other aquatic organisms and subtidal habitats, creates the policy framework called for in the comment.
7. A new proposed climate change policy 4 was added to the staff's revised preliminary recommendation that encourages the protection, enhancement, creation and migration of tidal wetlands. Also, existing dredging policies, and tidal marsh and tidal flats policies, as amended would address the sediment and buffer issues raised. The second suggested addition to proposed climate change policy 1 would be redundant with existing policies in the McAteer-Petris Act and the Bay Plan and the aforementioned policy 3-b provides this guidance for the regional strategy.
8. The recommendation to use the term strategy in lieu of plan is consistent with the approach of postponing the determination of which agencies will need additional authority until a regional approach to addressing sea level rise, and potentially other impacts from climate change, is developed. See also response to comment 2.
9. The regional strategy proposed in climate change policy 2 will very likely include recommendations for changes to the Bay Plan to implement it. The preamble to policy 2 has been revised to include ...formulate a regional climate change adaptation strategy ... The strategy should rely on an adaptive management approach, be updated regularly to reflect changing conditions and information, and include a map of shoreline areas that are vulnerable to flooding based on current sea level rise and shoreline flooding scenarios. See also response to comment 8.

10. Revised policy 2 includes a phrase "enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying, acquiring and enhancing both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward" which addresses the comment by including the text "and acquiring or enhancing" to expand beyond just identifying opportunities to implementing them. See also response to comment 7.
11. The proposed change to climate change policy 2.e. was not made, consistent with response to comment 5.
12. The proposed change was incorporated into revised policy 2, subparagraph h.
13. See responses to Comments 2, 6, 7 and 10.

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saveSFbay.org

May 7, 2009

The Honorable R. Sean Randolph, Chair
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

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

Dear Mr. Chairman and Commissioners:

Save The Bay has a long history of supporting the Commission's efforts to update the Bay Plan so that it continues to be a strong, relevant, and useful policy document. We have also expressed strong support and encouragement for BCDC's leadership role on climate change, and worked hard to enhance the Commission's credibility and effectiveness as protector of San Francisco Bay and its shoreline. Bay Plan Amendment No. 1-08 presents an important opportunity for BCDC to lead the Bay Area's effort to cope with climate change and adapt in ways that will protect natural resources, people and infrastructure.

We appreciate the comprehensive staff report that has been compiled on climate change and the Bay's needs. This report identifies serious vulnerabilities for the Bay from climate change impacts. It makes a very strong case that public health, economic security, quality of life and the health of the Bay ecosystem will likely suffer if individual municipalities make uncoordinated decisions about development in inundation zones. The report shows that the Bay needs both regional planning for climate change adaptation, and also key actions starting immediately, including:

- accelerating marsh restoration
- preserving opportunities for marsh migration upland and buffers
- increasing flood protection, using natural methods where possible, and
- reducing the infrastructure and people at risk from floods.

The report underscores that these needs are urgent, and explains where BCDC's regulatory authority currently falls short of what the region needs. In fact the report is a very strong case statement for BCDC leading future regional efforts around climate change adaptation.

Explicitly Assert BCDC's Leadership and Seek Additional Authority

Unfortunately, the staff recommendation falls short of what the staff report, and all we know about climate change and the Bay, supports – it fails to say explicitly that BCDC should lead in creating the regional climate change adaptation plan and

SAVE THE BAY

should lead in actually implementing it. BCDC needs more authority to accomplish what the Bay needs, and some of that authority should be secured right away.

On this issue, the situation is analogous to the rampant Bay filling individual cities were conducting without regulation in the 1960s, which led to BCDC's creation. The response should be no less robust.

In 1965, the original McAteer commission told the state legislature that the Bay needed protection from further piecemeal filling while more comprehensive planning proceeded, and that BCDC "should be empowered to issue or deny permits, after public hearings, for any proposed project that involves placing fill in the bay or extracting submerged materials from the bay." The legislature placed a moratorium on Bay fill and created BCDC to study and recommend a regional regulatory approach to the Bay. BCDC had interim permitting authority over fill projects, so the destruction of the Bay wouldn't accelerate during the next four years of study.

Right now, the Bay needs on adaptation what it got in 1965 on fill. The Bay needs BCDC to have additional authority to prevent bad shoreline development decisions while a detailed adaptation plan is created, so crucial habitat restoration and shoreline protection opportunities are not lost, and so that unwise, risky, development does not proceed.

In this Bay Plan Amendment, you should seek that kind of interim permitting authority over proposed new development in undeveloped shoreline areas at risk of inundation, areas that could support marsh creation and other adaptation.

Strengthen Climate Change Findings and Policies

We therefore encourage the Commission to accept some changes to the staff recommendation so the policies and findings that you adopt now:

1. Continue to treat climate change with appropriate urgency, and enhance BCDC's growing credibility on Bay impacts from sea-level rise
2. Ensure that opportunities for adaptation are preserved and risks to people, wildlife and infrastructure are not increased while regional planning proceeds
3. Explicitly seek the additional authorities needed for appropriate adaptation planning and regulatory enforcement in
 - the Bay,
 - the current 100-foot shoreline band,
 - undeveloped diked historic baylands areas at risk of inundation from projected sea level rise, including managed wetlands and salt ponds
 - other areas at risk of inundation from projected sea level rise.

Having no agency leading the needed planning and regional implementation would be dangerous and unacceptable. BCDC is the agency best positioned to do the task well and to use additional authority effectively. Only by clearly asserting its standing as we recommend, will BCDC encourage agencies or individuals to suggest any different approach and explain how that would yield a better result.

3

Our specific recommended changes to the wording of the staff's proposed findings and policies for the new Bay Plan Climate Change section are attached.

Strengthen Managed Wetlands and Salt Ponds Findings and Policies

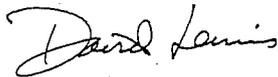
We also repeat our February request that the Commission also take steps to update those other sections of the San Francisco Bay Plan that cover portions of the shoreline at greatest risk of inundation from sea level rise. This will encourage full consideration of climate change in planning and permitting within BCDC's jurisdiction, and will enhance efforts to augment BCDC's authority as needed. In particular, the Managed Wetlands and Salt Ponds findings and policies need attention to ensure consistency with the new Climate Change section, and provide clear direction on permits.

4

The October 24, 2008 staff recommendation the Commission adopted on November 6, 2008, states that the purpose of Bay Plan Amendment No. 1-08 is, in part, to update "findings and policies in several sections of the Bay Plan to be consistent with current information." BCDC's climate change maps showing modest projected sea level rise indicate that sites covered by the Managed Wetlands and Salt Ponds findings and policies are a significant portion of the total area facing inundation over the next 50 to 100 years. Yet neither section explicitly acknowledges climate change or sea level rise, an even more glaring omission that is underscored by the new staff report on Climate Change. We would be pleased to provide specific suggestions for wording changes that would make those two sections of the Bay Plan consistent with the new Climate Change policies, and encourage you to appropriately notice and approve those additional Plan updates.

Thank you very much for your consideration.

Sincerely,



David Lewis
Executive Director

Enclosure

Climate Change Section

~~Strikethrough~~ = deletion

Underline = addition

Findings

m. Climate change impacts will occur on a regional scale. Government jurisdictional boundaries and authorities over the Bay and shoreline are incongruent with the scale and nature of climate-related challenges. ~~A framework for regional decision-making plan to address climate change impacts on the Bay and shoreline is needed, and. The Joint Policy Committee is comprised of regional agencies that collaborate to develop consistent and effective region-wide policy and local government assistance and incentives.~~ the Commission is the agency best positioned to lead development of that plan, enlisting regional agencies and municipalities to create consistent and effective region-wide policy, adaptation strategies, and local government assistance and incentives.

5

n. The Commission is the agency best equipped to lead actual implementation of a plan to address climate change impacts on the Bay and shoreline and in areas at risk of flood and inundation from projected sea level rise, by regulating implementation of sea level rise adaptation strategies. The Commission's existing regulatory authority and the San Francisco Bay Plan provide a strong framework that should be augmented to ensure effective implementation of that plan and its strategies.

o. In accordance with the Precautionary Principle and the prescription to "first, do no harm" to the Bay, the Commission should minimize adverse effects of sea level rise during the interim period while it develops a regional plan to address climate change impacts on the Bay and shoreline, using its existing authority and obtaining additional authority to prevent increased risks to people, infrastructure, wildlife, habitat and other Bay resources.

Policies

1. Measures to address the future effects of climate change should use a risk-averse scenario of sea level rise that is regularly updated based on current scientific understanding. To minimize the adverse effects of sea level rise and storm activity on all projects and to guide the permitting of shoreline protection projects, the Commission should use this scenario to: (a) encourage new projects on the shoreline to be set back from the edge of the shore above a 100-year flood level that takes future sea level rise into account for the expected life of the project, or otherwise be specifically designed to tolerate sea level rise and storms and to minimize environmental impacts; (b) discourage changes in use of shoreline areas and projects to place development in undeveloped areas that could provide opportunities for tidal wetland restoration, migration, or buffer zones; (c) discourage new projects that will require new structural shoreline protection during the expected life of the project, especially where no shoreline protection currently exists; (ed) determine whether alternative measures that would involve less fill or

6

impacts to the Bay are feasible; ~~(de)~~ require an assessment of risks from a 100-year flood that takes future sea level rise into account for the expected life of the project; ~~(f)~~ encourage projects that protect Bay habitats, fish, wildlife and other aquatic organisms, restore tidal wetlands and related habitats, manage sediment for marsh accretion and natural flood protection, and maintain upland buffer areas around tidal wetlands; and ~~(eg)~~ require that where shoreline protection is necessary, ecosystem impacts are minimized.

7

2. The Commission, ~~in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public,~~ should formulate a regional climate change adaptation ~~strategy plan with strategies for creating resilient Bay and shoreline systems and increasing their adaptive capacity.~~ The ~~strategy plan should be developed with input from other regional, state and federal agencies, local governments and the general public, should be updated regularly to reflect changing conditions and information, and should include a map of shoreline areas that are vulnerable to flooding based on current sea level rise and shoreline flooding scenarios.~~

8

The goals of the ~~strategy plan~~ should be to:

a. protect the shoreline environment with particular emphasis on existing development, public safety and infrastructure critical to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, public access and recreation areas;

9

b. protect the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) with particular emphasis on identifying opportunities for tidal wetlands and tidal flats to migrate landward, managing adequate volumes of sediment for marsh accretion, developing and planning for natural flood protection, maintaining sufficient upland buffer areas around tidal wetlands, and encouraging implementation of these opportunities;

c. integrate the protection of the shoreline environment with the enhancement of the Bay ecosystem by emphasizing shoreline protection measures that incorporate natural Bay habitat for flood control and erosion;

d. discourage changes in use of undeveloped shoreline areas and projects to place development in undeveloped shoreline areas that present opportunities for tidal wetland restoration, migration, or buffer zones ;

10

~~de.~~ identify a framework and mechanisms for integrating the mitigation and adaptation responses of multiple government agencies;

11

~~e.~~ identify ~~mechanisms for integrating mitigation and adaptation measures through the Joint Policy Committee;~~

~~fe.~~ address environmental justice;

~~gf.~~ support research that delivers useful information for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;

hg. identify actions to prepare and implement the strategy, including any additional needed changes in law; and

12

ih. identify mechanisms to provide information, tools, and financial resources to local governments to assist them with climate change adaptation planning.

3. The Commission should immediately seek changes in law that provide it with interim authority to preserve opportunities for climate change adaptation and prevent increased risks to people, wildlife and infrastructure from climate change, while it formulates a regional climate change adaptation plan. These changes should empower the Commission to issue or deny permits, after public hearings, for any proposed project that involves placing:

13

a. new development in undeveloped areas at risk of inundation from projected sea level rise, including areas that could otherwise provide opportunities for marsh creation and other natural adaptation in (1) the Bay, (2) the current 100-foot shoreline band, (3) undeveloped diked historic baylands, including managed wetlands and salt ponds, and (4) other areas at risk of inundation from projected sea level rise;

b. additional development in developed areas at risk of inundation from projected sea level rise, unless the project area already has in place shoreline protection properly engineered to provide erosion control and flood protection for the project based on a 100-year flood event that takes future sea level rise into account.

Michael Josselyn, Wetlands Research Associates, May 5, 2009. Staff response below corresponds to the comment letter from Wetlands Research Associates received on May 6, 2009.

1. Comment noted.
2. We agree that the impacts of sea level rise to wetlands are more complex than can be illustrated by the general inundations maps contained in the report. However, the text and other graphics in the report address the variable vulnerabilities of different tidal and diked wetlands. The concerns regarding differences between tidal wetland vulnerability in Suisun Marsh and the South Bay are specifically addressed on p. 107- paragraph 1 and on p. 112- paragraph 2 respectively. The sections on "Constraints to Wetland Adaptation" and "Shoreline Protection Impacts" together address these concerns. Figure 3.1 depicts the process that this comment describes, and the purpose of including bullets with the maps in Figs. 3.4- 3.7 was to further demonstrate the complexity and variability of wetland vulnerability throughout the Bay. Dr. Josselyn notes that tidal marshes with significant sediment sources are likely to be able to maintain their elevation in relation to sea level rise. The South Bay experienced less mudflat loss and has a greater overall area of mudflats than most regions of the Bay. Yet the South Bay Salt Ponds Science Team identified mudflat loss and long term sediment supply as an uncertainty worthy of research, a recommendation that Dr. Josselyn supports in his comment on Finding L. Given sediment is still an uncertainty in the South Bay, we think there is insufficient scientific information to say that it is "likely" that tidal marshes with significant sediment sources will maintain their elevation in relation to sea level rise. It is an important management concern worth of research. We also agree that the policies addressing wetlands will affect far more acreage than areas of development.
3. Measures to reduce wave energy and promote sediment deposition are beneficial. The use of the word "can" in proposed finding k. does not preclude incorporating existing levees in tidal wetland restoration projects either by breaching or maintaining levees in some capacity. Proposed policy 1 in the Climate Change section and Policy 1 in the Shoreline Protection section also would not preclude the use of existing levees in tidal restoration projects: However, there is insufficient scientific information available substantiating the benefits of constructing new levees to protect Bay tidal marshes. The tidal marsh and tidal flats policy 8 provides that "a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat if the Commission finds that no other method of enhancement or restoration except filling is feasible." This policy requires that such fill be supported by scientific and ecological analysis. At this time there is insufficient Bay-specific information or analysis available to support the policy direction proposed by Dr. Josselyn. Regarding Muzzi Marsh, BCDC is about to embark on an evaluation of Muzzi Marsh to investigate the performance of such techniques and to evaluate alternative techniques for reducing wave energy and promoting sediment deposition. Additional research is needed to clarify where and how levees can be used effectively used to protect wetlands.
4. The staff agrees with Dr. Josselyn's comments and appreciates that he recognized this error. The staff recommends changing the word "will" to "may."
5. The Bay Plan policy section on Mitigation, Policy 5, addresses buffers in mitigation projects and other mitigation policies also address long-term viability of marsh restoration for mitigation purposes. Additionally, the staff believes that proposed changes to tidal marshes and tidal flats policy 6 creates incentives and may require some projects to incorporate buffers because applicants will be required to evaluate the need for an adequate buffer as part of the permit application process. This policy change acknowledges that not all projects will be able to provide buffers.
6. In certain circumstances, levees or other types of fill may be useful for wave attenuation or other benefits for wetlands. Depending on the specific proposal, fill for such projects could be allowed based on proposed updates to Policy 1 in shoreline protection, policy 4 in safety of fills, and in policies 6 and 8 in tidal marshes and tidal flats. However please also see response 3 regarding the limited application of these policies.

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May 5, 2009

Will Travis, Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street Suite 2600
San Francisco, CA 94111

RE: Preliminary Recommendation for Proposed Bay Plan Amendments concerning climate change

Dear Mr. Travis:

I am writing to congratulate the staff for its outstanding work in the preparation of the Draft Staff Report on "Living with a Rising Bay". As a professional wetland scientist involved in the study and restoration of bay tidal marshes for over 30 years, I am pleased with the level of technical discussion and careful detail in explaining climate change issues to the Commission and to the public. This issue will profoundly affect the Bay environment over the next 50 years and early planning is necessary to reduce impacts and the costs for addressing sea level rise due to global warming.

1

As a consultant to BCDC, I prepared a report with Moffat and Nichol on sea level rise and its implications for San Francisco Bay in 1987. Concurrently, I was a participant in an EPA sponsored study on sea-level rise and its effect on the nation's wetlands and gave testimony to Congress on the effect of sea level rise on the San Francisco Bay and Delta. I have continued my interest in this topic over the years having participated in several national panels on this issue and published papers in the scientific literature¹.

Based on this research and experience, my primary comment is that the response to sea level rise by tidal marsh systems is likely to be more complex than perhaps can be illustrated by the maps contained in the report. Tidal marshes in areas with significant sediment sources are likely to be able to maintain their elevation in relation to sea-level rise and have done so in areas of high subsidence such as the south bay over the past 50 years. However, diked marsh systems such as Suisun Bay are more likely to be impacted as they do not receive sediment from tidal action and will not be able to effectively drain as the tidal range rises. Thus, the concept of vulnerability varies and is not the same throughout the bay. Because the vast majority of the acreage that is "vulnerable" to sea level rise is either tidal or diked wetlands, it is important to recognize that the Bay policies that focus on tidal marshes, diked wetlands, and salt ponds will affect far more acreage than areas of development.

2

¹ Josselyn, M.N. and P.G. Goodwin. 1999. Planning tidal restoration projects for global climate change. *J. Biogeochemistry* 3: 62-71.

My comments focus on the suggested findings and policies for tidal marshes and flats:

Findings

- k. The additional of landward migration as a description for tidal marshes is broad-based and is certainly true for wetlands that are not protected by levees. In my report to the EPA, we documented that, in the 1980s, approximately 50 acres of tidal marsh are lost/year in San Francisco Bay due to wave erosion alone. However, it is also important to recognize the levees can provide protection for marshes such that wave action is reduced and land-ward migration can be slowed or halted. The loss of the levees along the Muzzi Marsh in Corte Madera provides a prime example where marsh habitat is being lost now that the levees have been eroded. In the Cogswell marsh in Hayward, the presence of levees has allowed the tidal marsh there to be protected from the significant wave action of the south Bay even as the outboard marsh has been lost over the past 20 years. Thus, it is important to recognize the maintaining levees around tidal marshes (while allowing for breaching in certain portions of the levee) is an important finding and may be one of the methods used to protect loss of the outer margin of the tidal marsh. 3

- l. One of the scientific uncertainties applicable to tidal restoration of San Francisco Bay is whether the erosion of tidal mudflats is a potential impact of the restoration of salt ponds to tidal marsh. The Scientific Advisory Panel to the South Bay Salt Pond Restoration Project determined that there was insufficient information to determine whether mudflat loss was an inevitable outcome of tidal restoration and posed this as an important problem for further research. To state in these findings that it is a "fact" that erosion of tidal flats will accelerate is not correct and should be eliminated. The Panel did support additional research on this topic and I concur with the findings that also state the need for such research. 4

Policies

- 6. It is important to recognize the buffers can be incorporated into project designs, but unless agencies are willing to give credit to such buffers as they do for wetland acreage, the incentive to include them is nil. BCDC should state clearly that it will consider buffers in its consideration of the overall mitigation plan for losses associated with Bay fill and that the buffers will fulfil an important role in the overall evaluation of the wetland restoration project. 5

Under Shoreline Protection, I believe that the Commission should recognize that fills for levees to protect tidal marsh systems should be allowed. It may best be placed under findings f. It should be accompanied by a policy that states that levee construction and maintenance may be allowed to protect bay tidal marshes from bayside erosion, even if it results in Bay fill. In some instances, it may be new Bay fill in order to "trip waves" before they reach the edge of a tidal marsh and in other instances it may be maintenance of existing levees. If this is not recognized in the BCDC policies, it will be very difficult to take corrective actions where necessary to preserve tidal marshes. 6

Thank you for your efforts in preparing this document and I hope that these comments are useful to the Commission in your deliberations on revised findings and policies.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'Michael Josselyn', with a long horizontal line extending to the right.

Michael Josselyn, PhD
Principal

Richard Skaff, Designing Accessible Communities, May 2009. Staff response below corresponds to the comment letter from Designing Accessible Communities that was not dated, but was received in our office as an email attachment in May 2009.

1. The draft background report was distributed widely by mail and posting on our website, and made available for review and comment by the public from July 16, 2009. Members of the public include people with disabilities and the Commission is encouraged by the participation of your organization in this process. The draft background report is based on sound science, which required a great deal of research, analysis and interpretation. Prior to releasing the draft report for public review, an early draft underwent technical review to ensure that the science was accurately represented. The acknowledgements to which you refer are directed toward those technical reviewers and other scientists that contributed information to the report, and funding agencies.
2. Information will be added to Chapter 2 of the background report to clarify that people with disabilities face additional challenges during emergency evacuations and can be more susceptible to some of the economic hardships that make evacuation more difficult. This makes them especially vulnerable to flooding from sea level rise and storm activity. The 2000 US Census found that about 16 percent of Californians over the age of 5 had disabilities. If that percentage can be applied to the Bay Area, and by extension vulnerable shoreline areas, approximately 43,000 people with disabilities would be included in that population. Although, detailed data for the location and percentage of people living in vulnerable areas who have disabilities is not available for a quantitative analysis, the draft background report has been revised to include additional discussion of the particular vulnerabilities faced by this population (also see response to comment 11).
3. BCDC's jurisdiction extends only 100 feet onto the shoreline. Within that 100-feet, BCDC can only deny development proposals that fail to provide maximum feasible public access or are inconsistent with a designated priority use area. Housing cannot be built in priority use areas. The proposed Climate Change policy section, Policy 3, describes a process for reviewing such development proposals and criteria for approving development that effectively responds to future sea level rise. However, this policy is only enforceable for projects on fill in the Bay, or as it can be tied to public access, and is otherwise a guidance policy for projects on the shoreline.
4. This analysis is outside the scope of this report and policy update. Please see the recreation policy update background report that was published in 2006.
5. The Attorney General's (AG) office has advised the Commission that state and federal law requires the Commission to assure its meetings and offices are accessible to persons with disabilities and may not make permit or enforcement decisions that discriminate against disabled persons. However, the AG's office also notes that "the Commission's obligations to extend to assuring that all aspects of projects for which it issues permits comply with the pertinent state and federal requirements.... Although the Commission does not have a general obligation to assure that the projects for which it issues permits comply with state and federal disability laws, the McAteer-Petris Act requires that projects include 'maximum feasible public access' to the Bay. The Bay Plan adopted pursuant to the Act, requires that public access required in a Commission permit include 'barrier free access for the physically handicapped to the maximum feasible extent. Therefore, where BCDC requires public access, it should ensure through permit conditions that the access is ADA accessible to the maximum extent feasible and may use existing state and federal regulations for persons with disabilities as guidance, such as the California Building Code. It is not necessary to modify existing Commission regulations at this time to achieve ADA-compliant public access to the maximum extent feasible. Moreover, modifying existing regulations to assure that all permitted sites are fully accessible is outside the scope of this report and policy update, the focus of which is planning for climate change. Nevertheless the staff recommends that the Commission include language in its Bay Plan findings noting that persons with disabilities have special problems that need to be addressed when planning for and responding to potential flooding from climate change and sea level rise.
6. The Commission's limited authority on the shoreline limits its ability to require safe and accessible forms of development, unless the "development" is a public access project. Also see response to comments 3 and 5.
7. The Commission has the authority to require that fill in the Bay is engineered and constructed for seismic safety pursuant to its law and Bay Plan policies. The safety of fills policies are most

relevant regarding seismic safety of fills. The Commission relies on the advise of its Engineering Criteria Review Board to ensure project proposals meet seismic safety requirements. The Commission does not have authority for emergency response planning or seismic safety on the shoreline, except as it pertains to public access required by the Commission.

8. The goal of the discussion on permitting time frames on page 20 of the draft staff report is to explain why we chose to attach time frames to our sea level rise scenarios, rather than to indicate any intent to automatically renew permits. The purpose of using scenarios is to identify the likely climate change impacts associated with that scenario. This discussion is unrelated to the issue of whether public access areas permitted many years ago comply with accessibility criteria or whether a process for bringing them into compliance with these requirements exists.
9. The comments are consistent with the findings in the background report regarding the vulnerability of existing shoreline public access areas and certain roadways to sea level rise.
10. Repairing existing levees will probably be insufficient protection from sea level rise and related storm surge. However, the discussion of levees on page 55 addresses the cost of levees that would be needed to effectively address sea level rise in vulnerable shoreline areas; it quotes cost estimates from a study conducted by the Pacific Institute, Inc. The estimate is based on areas vulnerable to sea level rise and flooding irrespective of whether existing protection exists, and thus does not address in any way maintenance of existing levees. Effective protection from rising seas will vary by location based on site-specific considerations. This report is too general to provide such specific guidance.
11. The data required to perform this kind of quantitative analysis is not readily available. After consulting with the Pacific Institute's experts on social equity issues, the staff determined that it may be possible to compile the necessary data from a variety of sources, but that work alone would be a substantial effort and outside the scope of this project. Recognizing the need to perform an analysis such as this, the staff report will be revised to include some discussion of this important future research need (also see comment 2).
12. BCDC is working closely with other regional agencies on the Joint Policy Committee to identify transit oriented development opportunities and provide incentives to local governments to concentrate housing and mixed-use development near transit centers. BCDC does not have the authority to deny development on the shoreline because it is vulnerable to flooding (see comment 3). That authority rests primarily with local governments.
13. The staff report will be revised so people with disabilities will be added to this list of those most vulnerable to the impacts of climate change.
14. The intent of discussing the way shoreline areas that are vulnerable to sea level rise are used by Bay Area residents is not to focus on any particular category of people, but to describe the types of infrastructure that may be at risk, and generally imply the impacts to quality of life that could result. Agencies, such as the Metropolitan Transportation Commission, transit providers, local congestion management agencies, or local governments implement improvements to the transit, bicycle and pedestrian network that affect mobility for people with disabilities. The report has provided some focus on the impacts to specific communities, including low-income communities and people with disabilities to show that the impacts of sea level rise and storm surges may be felt disproportionately by these communities in comparison to the general population. This is beyond the scope of BCDC's authority. Also, see response to comment 5.
15. See responses to comments 5 and 14.
16. As noted in response to comment 5 the Attorney General's office has advised the Commission that where BCDC requires public access in a permit, it should ensure through permit conditions that the access is barrier free access for the physically handicapped to the maximum extent feasible. The subject of accessible public access features is beyond the scope of this report, except insofar as they are vulnerable to sea level rise and storm surge and may be lost or damaged in the future as a result of these.

17. The sentence on page 93 of the report will be revised to indicate that options, such as stairs or ramps, may not satisfy the requirement to provide barrier free public access and that new shoreline protection devices that also support public access will have to be designed with the needs of people with disabilities.
18. The purpose of this table is to summarize vulnerabilities within land use categories on the shoreline. Person's with disabilities are members of the public and fall into the category of Public Access or fall into other categories where they engage in those land uses.
19. The outreach described on page 120 of the draft background report is in reference to two projects which provide good examples of public engagement, but were led by other agencies. Additional information on these project can be found at <http://www.southbayrestoration.org/> and at <http://quake.abag.ca.gov/mitigation/>. These examples are provided as model processes that could guide public outreach efforts for a regional adaptation strategy development effort. The report will be revised to add language about the need to ensure input from special communities in any such outreach effort.
20. Under the Coastal Zone Management Act, federal agencies are generally required to carry out their activities and programs in a manner "consistent" with the Commission's coastal management program. To implement this provision, federal agencies make "consistency determinations" on their proposed activities, and applicants for federal permits, licenses, other authorization, or federal financial assistance make "consistency certifications." The Commission then has the opportunity to review the consistency determinations and certifications and to either concur with them or object to them. The Commission's decisions on federal consistency matters are governed by the provisions of the Coastal Zone Management Act and the Department of Commerce regulations. See response to comment 49. The Commission considers consistency determinations and certifications in the same manner it considers permit applications. Consistency concurrence or objection occurs only after public hearings (except for consistency determinations or certifications for emergency or minor repairs to existing installations or minor improvements as provided in the Commission's regulations and which may be approved by the Executive Director). Also, note that barrier free public access to the physically handicapped must be provided in federal projects that involve the provision of public access.
21. See response to comment 5.
22. People with disabilities are members of the public who hold those public property rights under the Public Trust Doctrine. The rights are administered by the State Lands Commission and within the Bay by the State Lands Commission and BCDC for the benefit of the public.
23. See response to comment 3.
24. While there are no reports that specifically address the impacts of sea level rise on people with disabilities or the elderly near San Francisco Bay, a thorough literature review may result in additional information on this topic. The report has provided some focus on the impacts to specific communities, including low-income communities and people with disabilities to show that the impacts of sea level rise and storm surges may be felt disproportionately by these communities in comparison to the general population. The impact to each and every specific community is beyond the scope of this plan amendment project. The background report will be modified as described in responses to comments 2 and 11. Any future research effort would have to include such a literature review.



Comments

Draft Staff Report

Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline

Acknowledgements

I could find no mention of anyone from the disability community, individual or organization, participating and commenting on the report. If this is the case, then why?

1

Executive Summary

If 270,000 people in the Bay Area are at risk of flooding, what percentage of that number are persons with disabilities and where are they located? This same question should be addressed in many other parts of the report.

2

The Shoreline (P.2)

As an example, there are two newly constructed low income, multi-family developments in southern Marin. Not only are they isolated, but are in what appear to be flood zones. It is unlikely that they can be described as "residents.....who thrive". Why are we allowing new developments in these areas?

3

(P.3) Mention is made of 23,000 acres of waterfront parks. How many of these parks are accessible to persons with disabilities? How many have been permitted by BCDC and are not accessible (based on state and federal access codes/regs)?

4

Adaptation Strategies (P.7)

2. Modify existing regulations to assure that all permitted sites are fully accessible (based on state and federal access codes/regs) and ". . .Amend findings and policies on public access to provide public access that is sited, designed and managed to avoid significant adverse impacts from sea level rise and ensures long-term maintenance of public access areas. . ."

5

Add a new #6. What about future permits for development in flood plains? How will BCDC assure that these projects will be safe and accessible (based on state and federal access codes/regs)?

6

Page 19. Sea Level Rise and Extreme Events

Are there any policies and planning for emergencies? What about earthquakes and the concerns regarding "liquification" in developments in areas with filled land? Does BCDC consider that issue when giving permits for projects?

7

Page 20 There are many BCDC approved projects in existence that have never had the necessary and required accessibility when they were originally permitted. The policy of automatic renewal of permits means that the necessary accessibility required by state and federal access codes/regulations are never met.

8

Shoreline Protection (P.54)

“...Many of these revetments degraded tidal flats that provide important habitat to birds and dissipate wave energy. . .” These sites also include multi-family residential facilities as well as paths of travel (POT) for people with disabilities. As stated in an earlier comment, the new Corte Madera housing project on Paradise Drive and the public pathway along Paradise Drive will be affected (inundated) by flooding. In Mill Valley, the Firesides Senior Housing Project and the public pathway (railroad right-of-way between Sausalito and Mill Valley) will also be affected (inundated). In fact, on a regular basis, Shoreline Highway is flooded during the winter when it rains and there is a high tide.

9

Page 55 We can not rely on the maintenance of levees. Because of a lack of maintenance, the levees in Corte Madera were breached in the early 1980's.

10

Chapter Two

Page 59, 60, 61 “. . .An estimated 270,000 people in the Bay Area are at risk of flooding from a 55 inch rise in sea level. . .” What percentage of housing in those areas are below market rate and accessible units? Has Table 2.1 on page 61 been corrected to include any new residential projects with higher density and low income residents?

11

Why has BCDC allowed/permitted new construction in those areas? In many of these locations, there is either no accessible transportation or it's not available when the area floods and existing paths-of-travel would be lost. These low-income/high density housing is located in sites similar to those that were flooded during Hurricane Katrina in New Orleans. Presently, many residents who live in the Lower Ninth Ward are still living in FEMA trailers and unable to move back into their homes. During and after Katrina, many residents died because they had no way to leave the area that was flooding.

12

Page 78 Public Health Impacts

The categories of the most vulnerable populations (Luers et al,2006) omits altogether the category of those persons with disabilities.

13

Page 81 The report states that Bay Area residents, as part of their quality of life, "enjoy" an interconnected network of railroads, major roads and highways, BART, ferries and bicycle lanes which provide "mobility" to residents by getting them from their homes to their jobs and recreational areas. Are residents with disabilities equally served by this interconnected network?

14

Page 87 ". . .People use waterfront parks, beaches and public access to hike, bicycle, kayak, swim, fish, or just watch the sunset. . ." except that many of those facilities don't appear to meet required state/federal accessibility codes/regulations.

15

Page 93 ". . .Many of the public access areas required by BCDC are also components of the San Francisco Bay Trail. . ." which is, to a great extent, not accessible to persons with disabilities. The new Bay Area Water Trail system, at least in its present form, appears to have access points that seem to have no required accessibility for persons with disabilities.

16

There is a comment on this page that suggests it would be acceptable to use either stairs or ramps for access from the top of shoreline protection structures to the waters edge, once again allowing for inaccessible sites.

17

Page 95 - Table 2.3 I've noted an area in this table that is of concern – Shoreline uses – Public Access – Nothing stated regarding access for persons with disabilities

18

Page 120 Mention is made of the ". . .extensive outreach to key stakeholder and the public to effectively integrate and address the diversity of authorities and interests relevant to these projects. . . ." When and where was this outreach made and what organizations, groups/individuals from the disability community were contacted and gave input?

19

Page 122 & 123 This section states, ". . .BCDC is the federally designated state coastal management agency for the San Francisco Bay segment of the California Coastal Zone. This designation empowers the Commission to use the authority of the federal Coastal Zone Management Act to ensure that federal and federally committed or funded activities are consistent with the McAteer-Petris Act and the Suisun Marsh Preservation Act and Protection Plan, BCDC regulations, and the policies of the Bay Plan. . ." How do these state and federal regulations affect BCDC's permitting process and the enforcement, by BCDC, of state and federal access codes and regulations within BCDC permitted projects. Also, the Commission's permit authority requires that projects provide "maximum feasible public access". What does this mean?

20

Page 125, 126, 127 states that the Commission can deny a permit for a project that fails to provide maximum "feasible public access". How can that not require and assure that permitted projects meet all local, state and federal access codes/regulations and if they don't, they won't be permitted? The Report goes on to say that the Commissions policies ". . .further provide guidance for public access

21

and wildlife compatibility, the siting and design of public access areas. The policies also require public access to be permanently guaranteed and maintained. . .". How can this mandate not assure that all permitted projects within BCDC's authority meet all local, state and federal access codes/regs? Also, existing permitted projects, when requesting renewal of existing permits, don't appear to be reviewed as to their accessibility for persons with disabilities. The McAteer-Petris Act confers upon BCDC the authority to require "maximum feasible public access" but BCDC does not use that authority to assure access for people with disabilities in existing or new permitted projects. Although the public trust doctrine is based on the historic value that the public has a right of access to the shorelines of navigable waters, it would seem that those rights are not extended to those people who are disabled. The Commission should require project owners to pay for a neutral, outside review of project accessibility as it relates to local, state and federal access codes/regs

21

Page 128 states, ". . .The public trust doctrine is based on the historic value that the public has a right of access to the shorelines of navigable waters. . ." except for persons with disabilities?

22

Page 145 states, ". . .Measures to include low-income communities in decision-making should be identified and implemented. Most importantly, a regional analysis of social equity issues related to sea-level rise is needed. The analysis should look at low income communities at risk of flooding or adjacent to future flood zones and should recommend measure to prepare for and/or retreat from flood zones. Social equity, environmental justice organizations and public agencies are already working on climate change mitigation and other measures to reduce climate change impacts too and increase resilience of low income communities. The risks and impacts associated with sea level rise must be a component of these efforts. Beginning to address the issue now allows more time to adapt in the future. . ." Why are we continuing to allow the construction of low-income /accessible housing in flood zones?

23

Lastly, I am concerned that the section titled "References Cited" has no reports or data concerning the effects of living with a rising bay as it relates to persons who are aging or have disabilities.

24

Richard Skaff, Executive Director
Designing Accessible Communities

Ralph Nobles, Friends of Redwood City, June 3, 2009. Staff response below corresponds to the joint comment letter from the Friends of Redwood City received on June 4, 2009.

1. Comment noted.
2. Comment noted.
3. The purpose of using the term "general public" was to be inclusive of all likely participants, such as environmental leaders, scientists, and academic institutions. It also includes environmental justice organizations, business organizations, and just about any member of the public with an interest in and/or contribution to the process. Developing a regional adaptation strategy will require input from multiple sectors, including government, non-governmental organizations, academic institutions, and the public--broadly defined. Any list in the policy would be inadequate, because it would leave some important agency, organization or individual out. BCDC staff included the agencies with authority it must work with, and the public, recognizing it is an imperfect way of acknowledging the diverse interests from whom input will be necessary. BCDC has a consistent practice of working with scientists, environmental leaders and other experts for advice on permitting and policy development projects and will continue to rely on such advice through its Citizens Advisory Committee and Technical Review processes.
4. Policy 2 has been revised to be explicit that the strategy would rely on an adaptive management approach.
5. The Commission does not have the authority to deny permits in the 100-year flood plain or anywhere outside the 100-foot shoreline band. Also see responses to comments 3 in John Bruno's DMB May 6, 2009 letter, 1 in Barbara Salzman's Marin Audubon May 7, 2009 letter and 6 David Lewis' Save the Bay May 7, 2009 letter. The Commission can only deny permits within its 100-foot shoreline band if they fail to provide maximum feasible public access or are inconsistent with a priority use designation on the property.
6. Information regarding the serious risks of shoreline development to sea level rise is included throughout the proposed findings in the climate change section. Revised policy 1 requires the use of scenarios to evaluate risks, and proposed policy 3 allows or recommends development in low lying areas, only if the development can be made safe through a definitive adaptation strategy that protects Bay resources, and has a credible financing mechanism. Furthermore, the purpose of including a new climate change section is so that the new policies can be used in tandem with other policy sections of the Bay Plan to evaluate projects to address the effects of climate change and sea level rise in light of other policy initiatives. When evaluating a project, the Bay Plan must be read as a whole and all relevant policies in the Bay Plan applied. In this case, tidal marsh and tidal flat policy 4 applies to any proposed development of diked baylands, although it is advisory because the Commission lacks the authority to initiate or require wetland restoration, except where it requires mitigation.
7. The Commission did not include revisions to the salt ponds findings and policies in this Bay Plan amendment project, therefore, no changes can be made to these at this time. However the climate change policies apply in all areas where the Commission has jurisdiction, including salt ponds.
8. See response to comment 6.



Friends of Redwood City

Creating a Sustainable Community

June 3, 2009

San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, California 94111

Dear Chair Randolph and Commission Members,

The Friends of Redwood City (FORWC) provides for your consideration these comments on the *Draft Staff Report and Preliminary Recommendation for Proposed Bay Plan Amendment 1-08 Concerning Climate Change*. We applaud the detailed background work of the staff to characterize the enormity and complexity of the climate change threats that face us, especially sea-level rise. We bring you our comments from our vantage point on the bay edge of San Mateo County--the County that, according to the Pacific Institute's recent report, *The Impacts of Sea-Level Rise on the California Coast* (March 2009), is more vulnerable to the impacts of sea-level rise than any other county in California. The report estimates that 120,000 people in San Mateo County will be affected by sea-level rise to the tune of approximately \$26 billion dollars.

1

We are keenly aware of the dire threat that rising seas pose for San Mateo County and Redwood City, in particular, and we are heartened by agencies such as yours that are stepping forward and taking policy action to help the region mitigate and adapt to climate change effects. We see strong policies addressing climate change as critical for both reducing the danger to existing communities and ecosystems and preventing even more people from being exposed to dangers.

In reviewing the *Draft Staff Report*, we were pleased to see Policy 2 under the Climate Change policy section, calling for a coordinated, regional approach to understanding and effectively meeting the challenges of climate change. We recommend two changes to this section:

2

1. The first sentence reads, "The Commission, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional climate change adaptation strategy for creating resilient Bay and shoreline systems and increasing their adaptive capacity." We recommend adding environmental leaders and key scientists/academics and/or scientific and academic institutions to the list of collaborators. The Bay Area has a wealth of experts that the Commission should draw upon for environmental and scientific perspectives and content during the decision making process.

3

2. An additional goal of the strategy should be to develop and implement an adaptive management approach to the regional climate change strategy. The policy includes some pieces of this approach, but does not provide a clear overall description and implementation strategy of this method. An adaptive management approach, based on the best available information, identifies uncertainties to be resolved through studies and recommends actions whose outcomes are more certain. These actions are then monitored for their performance. This approach provides a feed-back loop for bringing the information learned through studies and monitoring into the decision-making process and improves mitigation and adaptation actions over time. This is an effective tool for learning from the actions we take and improving on them over time. Adaptive management processes are especially valuable for large scale, long-term projects with

4

many uncertainties, such as a regional San Francisco Bay climate change mitigation and adaptation strategy.

Climate Change Policy 1(b) is problematic as this section does not reflect the valuable information in the findings. For example, the findings state, “The Commission is responsible for protecting the public and ecosystem from exposure to the substantial risk of flooding, which is best achieved through cautious or risk averse planning...” and, “The shoreline area currently designated as the 100-year floodplain by the Federal Emergency Management Agency is vulnerable to a one-hundred percent chance of flooding by mid-century” and, “The combined effects of sea level rise, storm surge, tributary flooding, high tides, high winds, and El Niño events will likely cause severe flooding and erosion long before shoreline areas are permanently inundated by sea level rise alone.”

5

Based on these findings, the Policy 1(b) statement, which reads, “discourage new projects that will require new structural shoreline protection during the expected life of the project, especially where no shoreline protection currently exists”, is not reflective of the importance of the Commission's responsibility to protect the public and the environment. Projects placed in the path of sea-level rise expose people in their homes, schools and places of business, as well as emergency service personnel, to flooding and long-term inundation. These projects will require expensive and, most likely, infeasible levee or other flood protection structures. Rather than allowing property owners to create this hazard, we recommend that this statement read, “The Commission will not permit any project for human occupancy in the 100-year floodplain designated by the Federal Emergency Management Agency or in the area expected to be affected by sea level rise by 2100. Only projects *essential* to public safety and/or well-being or environmental protection, which are of a water-oriented nature requiring a location adjacent to the Bay, will be considered. Any such project must have full environmental and public review.” Such strong policies are needed to prevent more people and infrastructure from becoming vulnerable to sea level rise.

The current language of Policy 1(b) does not convey the fact that any new project in the path of sea-level rise is at serious risk. Human occupancy projects, such as housing, schools, fire and police stations, libraries, retail, commercial, or industrial, must not be placed in harms way. As the *Draft Staff Report* notes, “Structural shoreline protection can adversely affect the Bay ecosystem, block visual access, adversely impact physical public access and create a *false sense of security*” (emphasis added). In most cases, the highest and best use for areas that will be inundated in the future is to restore them to tidal marshes and other Bay wetlands, which “sequester carbon and provide flood protection, [and] serve as both adaptation and mitigation.” When tidal marshes are restored before the sea level rises, they can help protect lives, property and ecosystems from storm surges and sea level rise. Thus, we recommend, in appropriate policy sections such as in Climate Change policy section 1(b) and the Salt Pond Policies, including a policy stating, “Former tidal marshes, tidal flats, salt ponds, managed wetlands and other appropriate areas that have been diked from the Bay should be restored to tidal action in order to replace lost historic wetlands or should be managed to provide important Bay habitat functions, such as resting, foraging and breeding habitat for fish, other aquatic organisms and wildlife....Further, local government land use and tax policies should not lead to the conversion of these restorable lands to uses that would preclude or deter potential restoration and would make more people vulnerable to sea-level rise impacts.” This language echoes and adds to Tidal Marsh Policy 4.

6

We find it very curious, even baffling, that in this otherwise thorough report there are no specific findings and policies incorporated into the Salt Pond Policies. Clearly, this is a section requiring "more specific clarity" since salt ponds, such as the 1433-former salt ponds owned by Cargill Corporation in Redwood City, were recently part of the Bay, are low-lying, and are subject to sea-level rise inundation and severe flooding due to synergistic El Nino, storm, sea-level rise effects. There is not one mention of climate change or sea-level rise in the current Salt Pond Policies. At the very least, a reference to Policy 1(b) should be included in the Salt Pond Policies.

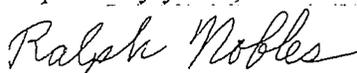
We recommend that the Salt Pond findings and policies be updated to address climate change and rising seas by adding findings that discuss: 1) the historic habitats from which salt ponds were formed, the potential for salt ponds (which by necessity are below sea level) to be inundated by sea level rise, the potential for those ponds to be restored to Bay wetlands, and the vital importance of restored wetlands to the nation's ecological, economic and social health, and 2) the vulnerabilities and costs created by developing Bay habitats, such as salt ponds, for human occupation based on information such as that in the March 2009 Pacific Institute sea-level rise report. In addition, we recommend a policy be added that states, "The Commission will not permit any project for human occupancy on salt ponds as they are in the 100-year floodplain designated by the Federal Emergency Management Agency or in the area expected to be affected by sea level rise by 2100. Only projects *essential* to public safety and/or well-being or environmental protection, which are of a water-oriented nature requiring a location adjacent to the Bay, will be considered. Any such approved project must have full environmental and public review."

From our vantage point in Redwood City, we look out to the Bay and see Bair Island, a large wetland area under restoration, which is a habitat for Bay wildlife, a source of recreation, a carbon sink, and a buffer protecting upland areas from storm surges. To the north of Bair Island, we see Redwood Shores, once a wetland like Bair Island, now developed with housing, schools, retail, and businesses. This area is protected with a levee, but that levee is not high enough to protect Redwood Shores from the coming rise in sea levels. Many millions of dollars will be needed to ensure the residents, schools, fire stations and businesses are not flooded, creating our own "9th Ward". Redwood Shores and Foster City, also a former wetland now a city in the Bay, are both in San Mateo County, which helps explain why this county is the most vulnerable in the state to sea level rise.

We also see over 1400 acres of former salt ponds owned by Cargill Corporation, which is under extreme development pressure. These ponds can either become another vulnerable city full of people needing very expensive shoreline protection or they can become wetlands that sequester carbon, provide wildlife habitat, and help buffer upland areas from storm surges and sea level rise. We look to the San Francisco Bay Conservation and Development Commission to enact strong policies that use "cautious or risk averse planning" with respect to all parts of the Bay edge, including former salt ponds.

Thank you very much for considering our comments.

Respectfully yours,



Ralph Nobles, Founding Member
Friends of Redwood City

John Martin, San Francisco International Airport, May 14, 2009. Staff response below corresponds to the San Francisco International Airport's comment letter received on May 18, 2009.

1. Comments submitted informally have been expanded upon in the formal transmittal dated July 20, 2009. Responses below address both the earlier informal comments, and the formal submittal.
2. Proposed changes to background report correcting passenger and cargo data will be made.
3. Sentence regarding limited available funding for improvements is unnecessary to characterize SFO's vulnerability. However, available funding is an important consideration for assessing adaptive capacity, and currently, the statement is correct. As we note elsewhere in the background report and in the findings and policies, vulnerability assessments must be updated on an ongoing basis to reflect changing circumstances. If funding becomes more available in the future, then SFO will have greater adaptive capacity and face less vulnerability from sea level rise.
4. The phrase "if unmitigated" will be added to the sentence describing the area of SFO that is vulnerable to sea level rise. The last half of the paragraph will be reworded as follows: "Runways at SFO are protected by a partial seawall that reduces its flooding vulnerability. Although the airfield was built on landfill, SFO has addressed runway subsidence through a regular program of repaving and overlay. However, gaps remain in the existing shoreline protection system. SFO is investigating the issue of storm surge to determine whether additional sea wall or levee height will be needed and whether existing drainage is sufficient.



RECEIVED

San Francisco International Airport

JUL 24 2009

SAN FRANCISCO BAY CONSERVATION & DEVELOPMENT COMMISSION

July 20, 2009

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Mr. Will Travis
Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

AIRPORT
COMMISSION
CITY AND COUNTY
OF SAN FRANCISCO

Subject: *Climate Change and Sea-Level Rise in San Francisco Bay*

Dear Will:

GAVIN NEWSOM

MAYOR

LARRY MAZZOLA

PRESIDENT

LINDA S. CRAYTON

VICE PRESIDENT

CARYL ITO

ELEANOR JOHNS

RICHARD J. GUGGENHIME

JOHN L. MARTIN

AIRPORT DIRECTOR

San Francisco International Airport (SFO) submitted initial comments on the Draft Staff Report, *Living With a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline*, on May 14, 2009. Since that time, SFO has been in conversation with Mr. Joe LaClair regarding additional amendments which were shared with him via e-mail on July 10, 2009. This letter constitutes our formal submission of those same amendments for your consideration.

As you know, SFO has already undertaken several mitigation and adaption measures to protect against airfield flooding through projected forecasts to 2050. We continuously upgrade these efforts and are undertaking further study of the potential effects of storm surge.

SFO looks forward to continuing to work collaboratively with BCDC and other stakeholders to address the long term challenges associated with sea level rise.

Very truly yours,

John L. Martin
Airport Director

Attachment

cc: Joe LaClair

Schools and Emergency Services. Important civic institutions such as schools, fire stations and hospitals are at increased risk of flooding under both sea level rise scenarios. Thirty-five schools are located in the current 100-year flood plain—where the risk of flooding increases substantially by mid-century. That number increases to 81 with 55-inches of sea level rise (Heberger et. al. 2008). Eleven fire stations, nine police stations, and 42 healthcare facilities are vulnerable to 55-inches of sea level rise (Heberger et. al. 2008). The extent to which this could compromise emergency response in an extreme event requires additional attention in coordination with the Federal Emergency Management Agency, cities and counties.

Commercial and Industrial Land Use

In 1969, when the Legislature adopted the Bay Plan into law, it recognized that some regionally significant land uses require a shoreline location. Without protecting shoreline areas for these land uses, there would be future pressure to fill the Bay to accommodate them. Therefore, the Bay Plan designates areas of the shoreline that are suitable for water-oriented priority uses: airports, ports, water-related industry, wildlife refuges and waterfront parks and beaches. Currently there are 86 designated areas comprising over 167,000 acres (260 square miles) throughout the nine county region. These priority use areas help make the Bay Area one of the most economically prosperous, ecologically rich and healthy urban centers in the world and they all will experience some increase in vulnerability related to flooding.

Airports. Two international airports in the region, San Francisco International (SFO) and Oakland International (OAK) are located on the Bay shoreline. These two airports provide important linkages with international and domestic trading partners and serve as major hubs of the national and global air passenger system and air cargo network.

SFO is the principal international air-cargo gateway within the region. In 2007-2008, SFO handled approximately 4637.4 million passengers and approximately 500425,000 metric tons of cargo (SFO Traffic Report, Airport Commission, City and County of San Francisco, December 2008). In 2007-2008, OAK handled approximately 11.4 million passengers and 600,000 metric tons of primarily, domestic cargo (Oakland International Airport, www.oaklandairport.com,

2008). Air cargo is the fastest growing segment of the goods movement economy and is forecast to triple in the next twenty to thirty years (MTC, 2004).

Both airports have limited land available for expansion of passenger and cargo facilities and runways. Funding for such improvements is limited due to federal budget constraints and the deteriorating financial health of national airlines. The two airports cover approximately 4,700 acres (7.3 square miles) along the shoreline of the Bay. Over 3,400 acres (five square miles) or 72 percent of these designated lands are vulnerable to a 16-inch sea level rise while approximately 4,400 acres (six square miles) or 93 percent of these designated lands are vulnerable to a 55-inch sea level rise (Figure 2.5). Runways at SFO are particularly vulnerable protected by a partial seawall that significantly reduces the flooding concerns through the mid-century. Built on land fill, the airfield at SFO has addressed the subsidence issue through a regular program of repaving and overlay construction every five to eight years to maintain the FAA standards for airport operations since their original construction. Raising levees around runways will be necessary to protect them from flooding, the cost of which could be as high as \$1,085 per foot (Heberger 2008). It may be necessary to raise runway elevations, which would require massive amounts of fill material from the Bay or elsewhere. The question of storm surge, and how it may be partially or fully mitigated by the seawall and by the Airport's drainage system is being assessed by SFO staff.

Congestion within the highway networks that serve each airport makes airport access difficult for passengers and cargo distributors. SFO is linked to the highway transportation network via the U.S. 101 and also has direct Bay Area Rapid Transit (BART) passenger service. Segments of the U.S. 101 and the BART tracks near the airport are vulnerable to a 16-inch sea level rise. OAK is linked to the region via the I-880 corridor, which is vulnerable to flooding near Port of Oakland and the Bay Bridge approach (Figure 2.6).

The Regional Airport Planning Committee—a collaborative effort between BCDC, the Metropolitan Transportation Commission and the Association of Bay Area Governments—was formed to address regional airport planning issues. During its current update to the Regional

3

Comment [J1]: Suggest deleting this sentence. It may not be relevant, and over time, may not be accurate.

Comment [J2]: If unmitigated.

4

5

Airport Systems Plan Analysis, the committee is analyzing methods to reduce GHG emissions from airports and address the affects of future sea level rise.

Farhad Mansourian, Marin County Department of Public Works, August 14, 2009. Staff response below corresponds to the Marin County Department of Public Works' comment letter received on August 20, 2009.

1. Comment noted.
2. An adaptation strategy addressing the information needs of local governments will be added to the report and will articulate that a clearinghouse for scientific information is needed, as is ongoing training for technical stakeholders. The strategy will also call for a public awareness effort to educate the public about the potential Bay Area impacts of climate change, including sea level rise, and potential adaptation and mitigation strategies that can and should be pursued.
3. BCDC staff presented the background report and proposed findings and policies at a meeting of the Bay Area Flood Protection Agency Association in early July. There is no climate change technical advisory committee at this time. However, BCDC staff will consistently outreach to the BAFPAA regarding its climate change efforts for input and technical advice. BCDC staff conducted three public workshops in September with outreach to all Bay Area local government staff and elected officials to solicit their input on these proposals. We will continue to engage local governments for future climate change planning efforts.
4. Governor Schwarzenegger issued executive order S-13-08 that recognizes the need for statewide consistency in planning for sea level rise and proposes funding a National Academy of Sciences (NAS) panel to conduct sea level rise assessment by 12/01/10. In addition to the NAS panel, BCDC staff is working with its federal and state agency partners to create a mechanism and process for prioritizing, interpreting and disseminating scientific information with a focus on getting federal science agencies, such as NOAA and USGS, and regulatory agencies, such as the USACOE, FEMA, EPA and USFWS to work together on this issue. It is beyond BCDC's authority to assume the role proposed for it in this comment.
5. See Response to Comment 5.
6. BCDC staff consulted with Kathy Schaefer, Senior Planner at FEMA Region IX, who is managing FEMA's flood mapping modernization program to facilitate adoption of Digital Flood Insurance Rate Maps (DFIRMs) for the Bay Area. She assured BCDC staff that FEMA has established Base Flood Elevations for all shoreline areas in the Bay Area and these are being updated through the map modernization program. Thus, the policies relying on FEMA BFE's can be implemented successfully.
7. BCDC staff agrees that current laws, including Proposition 218 limit the available mechanisms for raising funding in all communities, and that lower income communities face particular hardships.
8. The Bay Plan is a regional plan that has frequently won awards for its brevity and clarity. The Bay Plan policies are necessarily broad to capture the range of possibilities for various project types, shoreline configurations, and other variables defining the conditions at a particular project site. The terms "remain viable" refer to public access being able to withstand the impacts described in findings f and m., and being designed and managed to address the challenges identified in finding i. Common definitions for viable include: feasible, capable of being done with means at hand and circumstances as they are, able to maintain an independent existence. In this context, viable is a good term to describe the state that public access should remain in following a storm or particularly high tide given sea level rise. The intention is for the public access to be functional at all levels despite climate change.
9. BCDC staff has a strong, effective working relationship with FEMA, and we encourage FEMA to abandon its actuarial approach to assessing flood risk. The National Flood Insurance Program (NFIP) is based on historical flood data and probabilities that do not take future sea level rise into account. This omission distorts the NFIP risk assessment, potentially encouraging development that will not be resilient to sea level rise.
10. As noted in response to comment 4, BCDC is endeavoring with other agencies to create a clearinghouse for scientific information related to climate change, and will add that as a strategy in revisions to the background report. We do not have the funding or the authority to do so, but are pursuing these efforts because of the perceived and expressed need.

11. BCDC staff agrees that funding for adaptation efforts and investments will be necessary, and that funding must come from all sources including local, regional, state and federal. The Joint Policy Committee has and will continue to engage state lawmakers on regional funding needs for addressing climate change
12. The language in proposed climate change finding g. referring to moving structures outside flooding and inundation zones is not exclusive, but rather illustrative of one of many strategies that can be implemented to adapt development to rising seas. Three other examples are also provided, "protecting shorelines, or designing new construction to be resilient to sea level rise...restoring tidal marsh..." Furthermore, the background report provides several other examples of potential adaptation strategies. Each situation will require a unique solution.
13. Comment noted.
14. Comment noted. See also response to comment 4. The joint policy committee is established pursuant to state legislation, and changing its membership requires changes in state law.
15. Comment noted. Also, please see response 14.
16. Comment noted.
17. Comment noted. Also, please see responses 4 and 10.
18. Comment noted.
19. Please see response to comments 6 and 9. As noted there, FEMA has established and is updating Base Flood Elevations for all flood zones in the Bay Area. BCDC frequently relies on information provided by licensed surveyors as part of permit applications. Any information provided regarding BFE's would have to be verified with FEMA before the Commission could use it for conditioning development permits.
20. Comment noted.
21. Comment Noted.
22. Comment noted.
23. Please see response to comment 8. Climate change finding d and h, as well as proposed climate change policy 3, in conjunction with the revisions to the public access findings and policies provide ample guidance to permittees, the public and the Commission regarding the design of future public access to respond to sea level rise. It is unnecessary to repeat these standards in the public access policies to guide these decisions.

DEPARTMENT OF PUBLIC WORKS

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August 14, 2009

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AUG 20 2009

Farhad Mansourian, RCE
Director

Will Travis, Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street
San Francisco, CA 94111

Dear Mr. Travis,

Thank you for the opportunity to comment on the Bay Conservation and Development Commission's (BCDC) "Proposed Bay Plan Amendment 1-08 Concerning Climate Change". We encourage an enhanced approach that includes front-line, affected agencies in the policy formulation process, a thorough vetting of data sources and adopted references, and an educational outreach program that helps to set the stage, in the public's awareness, for the significant social and economic impacts sea-rise and these policies will create. My staff has contacted Joe La Clair to schedule a meeting to review these issues in more detail.

We have included 'section-specific' comments in the attached Appendix for your staff to review. Our comments fall into several broad categories that address process and policy.

- Create a means to share scientific data as it becomes available so as to facilitate the concurrent education of technical stakeholders in the Bay Area and initiate a process that will increase public awareness of the pending impacts of sea-rise. 2
- We urge BCDC to invite input from local Flood Control and Land Use agencies, such as the Bay Area Flood Protection Agency Association (BAFPAA), by adding their representatives to the climate change technical advisory committee. This will also benefit the Joint Policy Committee. 3
- We urge BCDC to manage the coordination of scientific data with appropriate representatives from NOAA, USGS, EPA, FEMA, the California Department of Water Resources, Regional Water Quality Control Board, and the U.S. Army Corps of Engineers and seek to issue a joint position statement on the impact of sea-rise. This will provide clarity and direction to local agencies and the general public. 4
- Coordinate specific, future sea level elevations with FEMA and the Corps of Engineers and issue joint findings. 5

- There is concern, at the local level, with the use of FEMA maps as the flood elevation baseline. In some cases, FEMA uses "best available information" to draw 100 year flood extents and does not assign a Base Flood elevation (BFE). Determining a BFE then falls to the local agency, frequently resulting in widely varying degrees of accuracy. There is a high potential for discrepancies in determining 100 year flood elevations and the sea-rise elevation. A review of the underlying science of these maps must be conducted before being used as the baseline reference for additional sea-rise protection. 6
- Recognize that both high income and low income areas have difficulties raising revenue in the current Prop 218 fiscal environment. 7
- Avoid language that can be broadly interpreted. For example, the phrase "remain viable" used in the context of public access to the bay. A specific definition of "viable" will be necessary. 8

We also offer one comment on the draft staff report, "*Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline*", dated April 7, 2009. In this document, BCDC recommends the phasing out of the National Flood Insurance Program (NFIP) in areas that are vulnerable to future sea-rise by mid-century. The report contends that the NFIP and its Community Rating System (CRS) encourage development in floodplains. This position is potentially in conflict with the current mission of FEMA's NFIP and could hamper the necessary cooperation between BCDC and FEMA as policy is developed. It could also have the further effect of alienating current residents and property owners in floodplains, resulting in political opposition to your efforts. We think this can be avoided through the early coordination with FEMA and local agencies in the policy process. 9

We look forward to continued cooperation in addressing this very significant issue as a community.

Sincerely,



Farhad Mansourian
Director

c: Supervisor Charles McGlashen
Bob Beaumont
Tracy Clay
Jack Curley
Liz Lewis

Attachments

APPENDIX

With respect to the draft staff report on the Bay Conservation and Development Commission's (BCDC) "Proposed Bay Plan Amendment 1-08 Concerning Climate Change", the Marin County Flood Control and Water Conservation District (MCFCWCD) offers the following comments organized by Policy section headings.

1. Climate Change

Findings

Re: Section c.: A clearinghouse is needed to make developing data available to local agencies in a timely way. If it already exists, outreach is required to let people know about it. Creation of an electronic newsletter could be helpful. 10

Re: Section f.: The current adaptive ability of the socio-economic system that encompasses flood control efforts is significantly impeded by the unavailability of funds, the gloomy potential for creating new revenue sources, and the difficulty in achieving the level public support required in a super-majority reality. It is in this context that the implementation of these policies will be played out. An expanded Joint Policy Committee must engage state lawmakers to emphasize how current budgets and laws surrounding revenue measures will have an adverse impact on protecting the shoreline. 11

Re: Section g.: Moving structures outside of flood and inundation zones is not feasible in high priced real estate markets such as Marin County. Other solutions must be explored. 12

Re: Section k.: We completely agree with this and point out that even high-income communities struggle to find the resources needed to make significant improvements. 13

Re: Section l.: We support this approach and encourage the Joint Policy Committee to take the lead in engaging those agencies sooner than later. Re: Section m.: We suggest expanding the Joint Policy Committee to include the Regional Water Quality Control Board, the U.S. Army Corps of Engineers, and regional alliances such as the Bay Area Flood Protection Agencies Association (BAFPAA) during this time of policy formation. 14

Policies

Re: Section 2.e.: Expand the Joint Policy Committee to include agencies that will be charged with implementing the policy and permitting requirements to participate in identifying mitigation and adaptation measures 15

Re: Section 2.h.: We fully support the addition of this aspect of planning. 16

Re: Section 2.i.: A central clearinghouse is very important to keep local agencies abreast of new data in a timely way to guide adaptation planning at the local level 17

2. Shoreline Protection

Findings

We are in agreement with the proposed language in the Findings section. 18

Policies

Re: Section 1. (c): A further clarification of the use of the FEMA 100 year floodplain as the reference for the extents of sea rise inundation is required. In many cases, FEMA does not designate a Base Flood Elevation (BFE) and the local agency is required to create a policy for doing so. In Marin County, this is delegated to private land surveyors. The potential for discrepancies is greater between BCDC, FEMA, and other agencies which could cause confusion and unnecessary expense at the local level without coordination during the policy formulation process and without critical review of referenced data. It is important that BCDC scrutinize the underlying science of the FEMA maps before using them as foundational references. We prefer to see a joint position statement from BCDC, FEMA, and the U.S. Army Corps of Engineers, supported by independent research and relevant local regulatory agencies, which shows agreement on the extents of sea level rise. Also, BCDC must decide if they will accept the finding of local surveyors in determining a BFE in any given area. 19

3. Safety of Fills

Findings & Policies

We support the proposed language. 20

4. Tidal Marshes and Tidal Flats

Findings

We support the proposed language 21

Policies

Re: Section 4: Mapping of the restorable lands will be helpful in keeping local agencies mindful of these requirements. Model Ordinances may also prove helpful. 22

5. Public Access

Findings

Re: Section 6: The term "remain viable" can be broadly interpreted. When fee title of easements are granted for public access as a condition of development, the access should be sited or constructed to protect it from the 100 year flood elevation plus sea rise using best available data at the time of permitting. This will minimize the cost of future maintenance and minimize deferred maintenance due to lack of funds. 23

Brad Benson, Port of San Francisco, Jul 16, 2009. Staff response below corresponds to the Port of San Francisco's comment memorandum received on July 16, 2009.

1. Comment noted.
2. Comment noted.
3. FEMA defines functionally dependent use as "a use, which cannot perform its intended purpose unless it is located or carried out in close proximity to water. This term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and shipbuilding and ship repair facilities, but does not include long-term storage or related manufacturing facilities." Thus, historic preservation of piers that were designed for functionally dependent uses, but would be restored for non-functionally dependent uses, such as office, museum, restaurant or other such use cannot rely on this exception for a variance from FEMA requirements. Preserving historic resources that were built for lower sea levels creates a paradox. The uses that can generate the land rents necessary to finance the rehabilitation of these structures are not functionally dependent, yet the important social goal of protecting these resources cannot be achieved without uses that would raise long-term public safety concerns due to potential flooding from sea level rise. There are options for retrofitting such structure in place in a manner that would protect them from sea level rise, but they are tremendously expensive. The following language has been added to revised safety of fills finding f. "Historic structures on fill will require special design approaches to address sea level rise in ways that do not compromise historic preservation goals or public safety." Additions to the Safety of Fills finding that the Port has suggested, which define functionally dependent use and historic structure, are of little value unless there are accompanying policies dealing with these terms.
4. The staff agrees that changes to special area plans will be needed to address the impacts of sea level rise. Since the policies of the Special Area Plans are generally required to be consistent with the Bay Plan, the proposed changes to the Bay Plan policies to address climate change must be read in conjunction and reconciled with existing policies in special area plans. Staff proposes adding a new subparagraph to policy 2 that states, "In areas where special area plans have been prepared and adopted by the Commission, these plans should be revised to be consistent with the Bay Plan policies addressing climate change and sea level rise."



Memorandum

To: Joe LaClair
From: Brad Benson
cc: Byron Rhett, Deputy Director of Planning and Development
Date: July 16, 2009
Re: Draft Port of San Francisco Comments on Proposed Bay Plan Amendment 1-08 Concerning Climate Change

The Port appreciates the opportunity to comment on BCDC's proposed Bay Plan Amendment 1-08. Port staff concurs that climate change presents a significant challenge to the Bay Area and the Health of San Francisco Bay. Future joint Port-BCDC planning efforts must confront the flood risk rising seas pose to Port property and our neighbors. We appreciate the leadership role BCDC has taken in promoting a challenging public policy dialogue about this issue. 1

The Port has had recent experience examining flood risk issues in the context of the decision of the Federal Emergency Management Agency's decision to digitize its Flood Insurance Rate Maps (FIRMs) for San Francisco Bay and, for the first time, map flood risks associated with the San Francisco waterfront. In response, the City Administrator, in consultation with the Port, formulated amendments to City code to minimize flood risks in flood prone areas. 2

Based on our preliminary review of Bay Plan Amendment 1-08, Port staff offers the following draft suggestions. We would prefer your review of these proposed comments prior to formally submitting any comments on the proposed amendment.

We suggest the following modification to Safety of Fills, Findings, paragraph f (page 13) (additions are underlined):

Other approaches that can reduce flood damage include protecting structures with levees, seawalls, tidal marshes, or other protective measures and employing innovative design concepts, such a building structures that can be easily relocated, tolerate periodic flooding, or float. A functionally dependent use, defined as a use that cannot perform its intended purpose unless it is located or carried out in close proximity to water such as docking facilities, port facilities for loading and unloading of cargo or passengers, and ship repair facilities, must be by necessity located at or near the water level at the time of construction. Similarly, an historic structure, defined as a structure that is listed individually in the National Register of Historic Places, contributes to the historical significance of a registered historic district, or is individually listed on the state or local inventory of historic places, may be subject to limitations with regard to elevation above the projected 100-year flood level. In these cases, other approaches besides location above the projected 100-year flood level 3.

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should be considered. For functionally dependent uses, these approaches could include designs that allow for proximity to the water under current conditions with flexibility for future modifications to accommodate sea level rise.

Implementation Policies for Areas with Specific Plans Governing Constructed Shorelines

The section on Climate Change provides the overarching findings and policies for the application of climate change concepts to the Bay Plan. Therefore, this section is the most appropriate location to address the role of Specific Plans such as the Special Area Plan for the San Francisco Waterfront in the application of climate change policies. We recommend adding the following language to the end of Climate Change, Policies paragraph 1 (page 7):

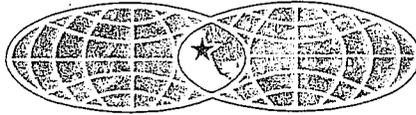
In areas where Specific Plans have been prepared, these plans should be revised to reflect climate change policies consistent with the Bay Plan, where appropriate. Measures to minimize the effects of sea level rise and storm activity on projects in these areas should be implemented in accordance with the policies of the Specific Plans.

4

We appreciate your consideration of these draft comments. If you would like to meet to discuss these suggestions further, please contact me at (415)-274-0498.

Kristi McKenney, Port of Oakland, June 8, 2009. Staff response below corresponds to the Port of Oakland's comment letter received on June 10, 2009.

1. Comment noted.
2. The Port of Oakland has taken a proactive approach to assessing the potential vulnerabilities of Oakland International Airport. In your letter, you "estimate that dike system protecting OAK can currently support approximately 36 inches of sea level rise at mean higher high water. The letter suggests that the vulnerability assessment in the background report may overstate the vulnerability of OAK to a 16-inch sea level rise at 72 percent of the airport land area. As noted on the maps, the vulnerability analysis does not take into account existing shoreline protection, such as sea walls, levees or other protective devices. The analysis also does not factor in potential storm surge. It is important when conducting a vulnerability analysis to use conservative scenarios that factor in the highest possible tide, storm surge, wind-driven wave runup and other factors.
3. Comment noted. The staff welcomes the opportunity to discuss your assessment and analysis.



PORT OF OAKLAND

June 8, 2009

Mr. Will Travis
Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

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JUN 10 2009

SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

Dear Mr. Travis:

Re: Sea-Level Rise in San Francisco Bay and Impacts at Oakland International Airport

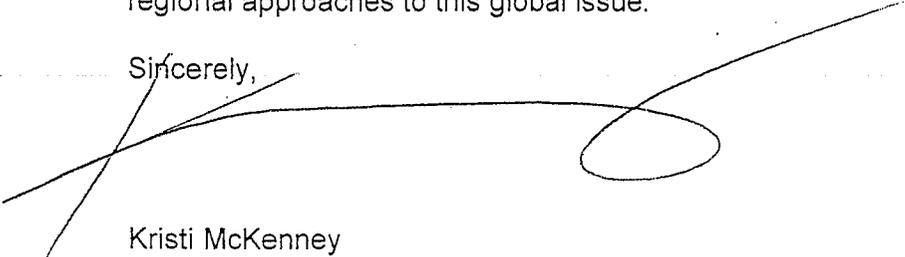
Oakland International Airport (OAK) has reviewed the Draft Staff Report, *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on the Shoreline* (April 7, 2009).

Given our Bayside location, we are particularly interested in the content and conclusions of your study. We have also begun an analysis of our infrastructure to assess vulnerability to the potential effects of climate change and to ensure we are prepared for the future. This analysis includes the effects of sea level rise and increased wave action intensity. We have also been studying our dike system to see how we can enhance it to withstand additional sea level rise and seismic events. 1

Based on the preliminary findings of our engineering team, we estimate the dike system protecting OAK can currently support approximately 36 inches of sea level rise at mean high high water (MHHW). In our review of the Draft BCDC report we noted that some of the conclusions, most notable that 72% of Airport land is vulnerable to a 16 inch rise in sea levels may overestimate the effects when compared to our recent analyses. We would welcome the opportunity to discuss our on-going work and the Draft BCDC report to compare analyses and share technical information on this important topic. 2

Oakland International Airport is a critical regional asset with a crucial role in providing air transportation, supporting the regional economy as well as providing disaster support. We look forward to continuing to work with BCDC and other stakeholders to explore regional approaches to this global issue. 3

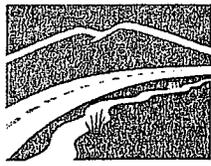
Sincerely,


Kristi McKenney
Manager Aviation Planning and Development

Cc: Joshua Polston AICP
Samuel Won
Diane Heinz

R. Mitch Avalon, Chair, Bay Area Flood Protection Agencies Association, Contra Costa County Department of Public Works, June 15, 2009. Staff response below corresponds to the Bay Area Flood Protection Agencies Association's, Contra Costa County Department of Public Works' comment letter received on June 16, 2009.

1. Comment noted.
2. Comment noted. BCDC staff appreciates the advice and input of the BAFAA.
3. The proposed Policy 1 has been split into two policies in the revised preliminary recommendation. Revised policy one requires use of a range of scenarios in assessing the risks from sea level rise for proposed shoreline development. Policy 3 would allow development in low lying areas within the Commission's jurisdiction under certain circumstances, or if those circumstances are not present, or would allow development that outside of the 100-year flood plain that takes projected sea level rise into account. The thrust behind this policy is to protect public safety by either ensuring that development in low-lying areas is protected from flooding, will not have significant adverse affects on the bay and meets other important regional goals. It also seeks to protect public safety by requiring that development that does not address these criteria be located away from areas of potential flooding. The flood plain defined in the revised policy 3, the current 100-year flood plain plus projected sea level rise, utilizes the best available current flood plain information available from FEMA, and projected sea level rise and storm surge to create a margin of safety for shoreline development. FEMA is currently updating its maps, and as time passes, maps in information developed in future updates will be used to calculate risk so that the most current information is used.
4. Developing a consistent flood plain estimate that factors in sea level rise would be a great asset to the Bay Area, particularly the agencies charged with protecting us from flood risk. Such an endeavor is beyond the authority or capability of the Commission.
5. Revised Policy 3 makes provision for minor repairs to existing facilities to address the issue raised in this comment. Clearly, maintaining existing flood control facilities is critical to protecting public safety. The revised policy would accommodate such repairs, but would also require that substantial repairs that extend the life of the structure be designed to address sea level rise.
6. The BAFPAA has been added to the Commission's interested parties list for this project and other efforts related to addressing climate change. The BAFPAA membership will be a critical ally and resource for developing a regional sea level rise adaptation strategy.



Contra Costa County
Public Works
Department

Julia R. Bueren, Director

Deputy Directors

R. Mitch Avalon • Brian M. Balbas

Stephen Kowalewski • Patricia McNamee

June 15, 2009

Will Travis, Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA, 94111

Will

Dear Mr. Travis:

The Bay Conservation and Development Commission (BCDC) has recently developed proposed amendments to the BCDC Bay Plan. These Bay Plan amendments incorporate the impacts of climate change on the San Francisco Bay shoreline. 1

The Bay Area Flood Protection Agencies Association (BAFPAA) was formed to represent the nine San Francisco Bay Area counties and communities in regional and statewide issues in the area of flood protection. For example, BAFPAA represents flood protection interests in the Bay Area Integrated Regional Water Management Plan. BAFPAA appreciates the efforts and forward thinking that BCDC is doing regarding climate change in the Bay Area and would like to offer a few comments. 2

Policy 1 in the proposed Climate Change section of the Bay Plan encourages new projects on the shoreline to be setback from the edge of the shore above a 100 year flood level that takes future sea level rise into account for the expected life of the project. Flood protection agencies would be interested in understanding the basis for this proposed 100 year flood level elevation. The Federal Emergency Management Agency (FEMA) is currently updating their flood insurance rate maps and putting them in a digital format. In addition, FEMA is requiring all owners of levees to certify the levees to FEMA standards. Finally, FEMA is conducting a Bay/Tidal Study that will take into account storm surge, wave run-up and storm water surface increases due to Delta storm flows. The Bay/Tidal Study does not include sea level rise. FEMA will be using data from these planning efforts to modify floodplain maps in the Bay Area. 3

Flood Protection Agencies in the Bay Area will be investing significant resources to address the flood protection needed due to FEMA's new mapping. It would be advantageous for everyone if we could collectively identify what the 100 year flood level is for insurance purposes and identify a future flood level that includes expected sea level rise. This would allow us to begin addressing expected sea level rise in our 4

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current planning efforts. Defining expected sea level rise and agreeing to a planning horizon will be key to this.

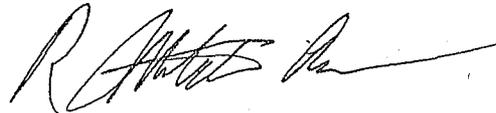
Flood protection agencies in the Bay Area are also concerned about the potential for the Bay Plan to restrict their ability to maintain flood protection facilities. Policy 1 in the Shoreline Protection section, and the general direction of other changes to the Bay Plan, requires existing flood protection facilities to be upgraded to provide flood protection for future sea level rise with facility **maintenance**. This would not be feasible in most instances. For example, everyone may acknowledge that a particular levee will need to be raised in the future to provide for future sea level rise. However, if maintenance work needs to be done now to replace a levee section damaged by erosion or repair a drainage pipe through a levee, the entire system cannot be improved to provide for future sea level rise with the maintenance project. The Bay Plan must recognize and make a distinction between capital planning and improvements of flood protection facilities and maintenance of flood protection facilities.

5

One of the proposed recommendations to the Commission is to work with the Joint Policy Committee and other agencies to integrate regional mitigation, adaptation strategies and adaptation responses. Implementation of many of the adaptation strategies and responses will rest with the flood protection agencies in the Bay Area. Please include BAFPAA on your distribution list when developing the adaptation strategies and responses. BAFPAA would like to provide input into the development of those strategies and responses and provide a perspective from the flood protection agencies in the Bay Area.

6

Sincerely,



R. Mitch Avalon, Chair
BAFPAA

Ann Draper, Santa Clara Valley Water District, June 2, 2009. Staff response below corresponds to the Santa Clara Valley Flood Control District's comment letter received on June 2, 2009.

1. Comment noted.
2. Comment noted.
3. The South Bay Salt Pond Restoration Project and South San Francisco Bay Shoreline Study are exemplary efforts that will generate considerable information valuable to our regional planning on climate change. The most appropriate place to provide additional discussion and acknowledgement of these projects is in the background report. Reference to the role of the Santa Clara Valley Water District and other project partners, and more description of the project will be added to the background report. As a matter of practice, the Commission does not reference specific projects in the Bay Plan.
4. Policy 5, as worded, does not presuppose that insufficient sediment will be available to sustain Bay wetlands as sea level rises. The thrust of the policy language is to encourage research to increase understanding of Bay sediment dynamics to support our regional goals of sustaining and restoring wetlands.
5. BCDC staff assisted in drafting the coastal sector of the State Adaptation strategy. This strategy is still in draft form undergoing revisions in response to public review and comment. The revised preliminary recommendation is consistent with the Draft State Adaptation Strategy. The Executive Order S-13-08 provides, in part that "The California Resources Agency, in cooperation with DWR, CEC, California's coastal management agencies, and the OPC, shall request that the National Academy of Sciences (NAS) convene an independent panel to complete the first California Sea Level Rise Assessment Report... the final Sea Level Rise Assessment Report be completed as soon as possible but no later than December 1, 2010. The final Sea Level Rise Assessment Report will advise how California should plan for future sea level rise..." BCDC will use the conclusions of the Sea Level Rise Assessment Report when guiding permit applicants who are preparing sea level rise risk assessments as required in revised climate change policy 1. This information will also be used for BCDC's local government assistance efforts and to inform development of a regional sea level rise adaptation strategy.
6. Please see response to comment number 3, from Contra Costa County. BCDC staff acknowledges that the base flood elevations for San Francisco Bay Area shoreline areas are being updated and modified through FEMA's map modernization effort. This new flood plain information provides a good basis for actuarial flood risk assessment, but, as noted in your comment, does not factor in sea level rise. Our revised policies call for applicants to use the most current 100-year flood plain information available, and a range of scenarios, including a conservative, high scenario to ensure that flood risks are adequately assessed.
7. The Commission cannot modify its jurisdiction through a Bay Plan amendment. The Commission's jurisdiction is established by the McAteer-Petris Act, and the location of the shoreline is defined in section 66610. Staff has prepared an analysis of the potential for the Commission's jurisdiction to migrate as sea level rises, however this has not been tested or confirmed. Please see http://www.bcdc.ca.gov/meetings/commission/2009/03-05_Public_Trust_Climate.pdf
8. Policy 1 in the original preliminary recommendation has been split into two policies, revised policy 1 and proposed policy 3. The revised policy would allow development in low-lying areas under certain circumstances, including the provision of adequate flood protection.
9. Comment noted.



June 2, 2009

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JUN - 3 2009

Mr. Will Travis
Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, California 94111

SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

Dear Mr. Travis:

Thank you for the opportunity to comment on the proposed amendments to the BCDC Bay Plan. These Bay Plan amendments incorporate the impacts of climate change on the San Francisco Bay shoreline. The mission of the Santa Clara Valley Water District (District) is a healthy, safe and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective and environmentally sensitive manner for current and future generations. 1

The South Bay community, especially the Alviso area of San Jose, Palo Alto, and Sunnyvale are susceptible to tidal flooding. When sea level rises, the flood risks to these communities will be increased. The District is very interested in applying the latest science and tools to its planning efforts to help identify options to lower the risk. Currently, the District is collaborating on the South Bay Salt Pond Restoration Project and working with the Army Corps of Engineers and others on planning shoreline protection in northern Santa Clara County. We are also developing tools to better assess sea level rise impact scenarios, to facilitate better understanding of the risks and uncertainties, and develop adaptation strategies. The District agrees with proposed Climate Change Finding "h", regarding the additional flood risk that sea level rise would bring to existing development and infrastructure. Sea level rise has implications for our communities' future, especially in terms of public health and safety, as well as economic and environmental vitality. We offer the following comments on the proposed changes to the Bay Plan for your consideration: 2

Acknowledge and Build Upon Ongoing Multiple Purpose Projects.

The South Bay Salt Pond Restoration Project and the South San Francisco Bay Shoreline Study are ongoing projects that seek to integrate tidal habitat restoration and flood protection measures, along with public access. The extent of both of these projects is large, involving at least 15,100 acres and encompassing all of the SF Bay shoreline in northern Santa Clara County. Both projects are incorporating sea level rise projections, and can be used as a cornerstone for broader regional planning. There may be similar efforts underway in other parts of the bay as well. We suggest amending Climate Change Finding "f" and Tidal Marsh Policy #4 to acknowledge these projects as models and use the results of these efforts as the basis for future planning. BCDC or other regional/state agencies should not need to replicate these multi-purpose projects. 3

Integrate Flexibility into Permitting.

The proposed changes to the Bay Plan acknowledge that a high degree of uncertainty currently exists in climate change and sea level rise predictions (Climate Change Finding "c"), and identifies that building adaptive capacity into Bay and shoreline systems is essential (Climate Change Policy #2). Proposed Bay Plan modifications also call for a study of sedimentation through time (Tidal Marshes and Tidal Flats Findings "l" and "m") because there are uncertainties about the sedimentation rate. It is possible that the results of research (such as that proposed in Tidal Marshes and Tidal Flats Policy #5) may find that sedimentation rates are *higher* than the proposed policy seems to assume. We agree that adaptive capacity is important, and would like to see the policy modified to be open to other alternatives than the current assumption.

4

Clarify How BCDC's Proposed Work Fits Under the Statewide Adaptation Strategies.

Under the Governor's Executive Order (EO) S-13-08, the Office of Planning and Research provides guidance to planning on responding to Sea Level Rise, and how this fits into the overall state-wide adaptation strategies.

5

Clarify Linkage to Federal Flood Mapping Work.

Policy #1 in the proposed Climate Change section of the Bay Plan encourages new projects on the shoreline to be set back from the edge of the shore above a 100-year flood level that accounts for future sea level rise for the expected life of the project. We are interested in understanding BCDC's technical basis for its assumed 100-year flood level. The Federal Emergency Management Agency (FEMA) is updating its flood insurance rate maps and converting them into a digital format. FEMA is also conducting a Bay/Tidal Study that will take into account storm surge, wave run-up and storm water surface increases due to Delta storm flows. The Bay/Tidal Study does not include sea level rise. FEMA will be using data from these planning efforts to modify floodplain maps in the Bay Area. Clarifying linkage to sea level rise scenarios to these upcoming maps, and outlining how to best apply the tools we have, will provide the basis for integrating climate science into flood protection planning.

6

Additionally, this policy could significantly affect land use and the determination of the location of the Bay shoreline. Please clarify the intent of this policy. Is it the intent to define the shoreline as the inland interface of "100 year flood level that takes sea level rise into account" or at the existing shoreline or at somewhere in between?

7

From a practical perspective given a potential sea level rise up to 55 inches, a proposed setback from a future possible shoreline could affect existing development north of highways 101 and 237 and could render these existing areas unbuildable. Is this BCDC's intent? There are other alternatives which the Shoreline Study will be exploring with local communities. These other alternatives would provide flood protection and allow for economic development. Again we recommend that the policies be modified to acknowledge and build upon local multi-purpose planning.

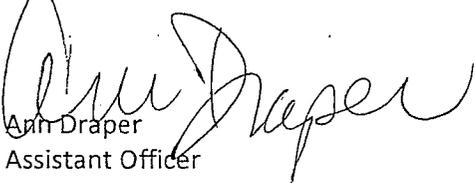
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Mr. Will Travis
Page 3
June 2, 2009

Thanks for the opportunity to comment. Should you have any questions, feel free to contact me or Ms. Sarah Young at (408)265-2600. We look forward to sharing our expertise and perspectives in adaptation strategies.

9

Sincerely,


Ann Draper
Assistant Officer

es/

- cc: SCVWD Board of Directors
Beau Goldie
Marc Klemencic
Dave Chesterman
Katherine Oven
Chris Elias
Liang Lee
Sarah Young
Beth Dyer
Sue Tippets
Sara Duckler
Brian Mendenhall

Bay Planning Coalition, Home Builders Association of Northern California, July 14, 2009. Staff response below corresponds to the joint comment letter from the Bay Planning Coalition and the Home Builders Association of Northern California received on July 14, 2009.

1. Comment Noted
2. The Commission held three public hearings on staff's preliminary recommendation for Bay Plan Amendment No. 1-08, which was published on April 7, 2009. The public hearings were held on May 7, June 4 and July 16, 2009. The Commission closed the public hearing on July 16, 2009, and endorsed staff's recommendation that called for preparation of a revised preliminary recommendation with a 30-day public review period prior to a public hearing, and scheduling a public hearing on the revised preliminary recommendation. The staff agrees that a considered approach to developing the proposed Bay Plan amendment is warranted, and this process provides for that. BCDC staff has made substantive changes to its preliminary recommendation, and is following the process outlined in Commission regulation sections 11003 and 11005(d). It is anticipated that the Commission will hold its fourth public hearing on proposed Bay Plan amendment No. 1-08 on November 5, 2009 and will either extend, or close the public hearing on that date. A final recommendation will not be prepared until the public hearing is closed.
3. The Administrative Procedures Act: Government Code §§ 11354.1, 11349.1-5, as it applies to the Commission requires that the Commission submit a clear, concise summary of the policy changes it adopts for publishing in the California Code of Regulations, and that the Commission submit the administrative record it relied on when considering the amendment, including response to comments. It provides that the Office of Administrative Law (OAL) shall review submittal for compliance with the criteria of necessity, legislative authority, clarity, consistency, reference and non-duplication. The revised preliminary recommendation meets these requirements because the Commission will submit a clear concise summary, and the administrative record as required in the Act. The OAL will review submittal for compliance with the criteria of necessity, legislative authority, clarity, consistency, reference and non-duplication.
4. BCDC, in partnership with the Bay Area Council Economic Institute, San Francisco Planning and Research (SPUR) with input from the California Department of Finance, the Legislative Analyst, and two Bay Area non-governmental organizations conducted a review focused on two questions: should BCDC remain a state agency or become a regional authority; and, how should BCDC be funded. This process did not consider BCDC's functions, except insofar as the BPC raised this issue at steering committee meetings. The final draft report is tentatively scheduled for consideration at a public hearing before the Commission on November 5, 2009. This process is independent of the process for adopting proposed Bay Plan amendment No. 1-08. It is not governed by the Commission's regulations and it is not required. The Commission conducted the study to assist the Governor and the Legislature in their budget deliberations for the next State fiscal year.
5. BCDC staff conducted three public workshops on September 15, 16 and 17, 2009 in Vallejo (North Bay), Palo Alto (South Bay) and San Francisco (Central Bay) to gather additional public input from federal, state and local government officials, flood control managers, interest groups and the general public on the staff's original preliminary recommendation, and possible changes to that recommendation. The workshops were well attended, and staff gleaned additional understanding of the perspectives of various interests that will inform revisions to staff's preliminary recommendation. BCDC staff appreciates the offer to assist with the workshops.
6. As noted above in response to comments 2 and 5, the Commission has provided ample opportunities for public input and comment. When developing its background report and findings and policies, BCDC staff relied on a group of experts for peer review to ensure that the science underpinning the Commission's conclusions was sound and did not overreach. The acknowledgement section of the background report provides a detailed discussion of the individuals and organizations that provided input to the report. The peer reviewers included

several scientists who contributed to the State of California's Climate Action Team reports on climate change projections and impacts for the State. We had input from US EPA and USGS scientists, several Bay Area scientists with impeccable credentials regarding Bay natural processes and members of the Commission's Citizens Advisory Committee, and Science and Technical Advisory Committee.

7. Comment Noted. The proposed policies are intended to provide general guidance to the Commission and the public regarding how to effectively address climate change within San Francisco Bay and along its shoreline. The primary focus of the policies is to protect public safety in a way that protects the habitat and resource values of San Francisco Bay when making permit decisions. The policy language is intended to give the Commission discretion and flexibility in applying the policies to address and accommodate the varied circumstances that occur along the almost 1,000 miles of shoreline and
8. As noted in response to comment No. 4, Bay Plan Amendment No. 1-08 and the process for evaluating BCDC funding alternatives are independent and separate from one another. BCDC was directed by the legislature in Section 66630 of the McAteer-Petris Act "Continuing Review of San Francisco Bay Plan" to "make a continuing review of all the matters referred to in Section 66603 and Section 66651." In other words, the legislature directed the Commission to keep the Bay Plan up to date. The Bay Plan amendment process is prescribed in Section 66651 of McAteer-Petris Act and Commission regulations and relevant sections of the Administrative Procedures Act.
9. Finding c does not refer to predictions. It states, in part, that "future sea level rise projections are likely to change" from current projections. The proposed finding does not require that the Commission use the projections of sea level rise mentioned therein. It states, in part that "The Commission is responsible for protecting the public and ecosystem from exposure to the substantial risk of flooding, which is **best** [emphasis added] achieved through precautionary or risk-averse planning, such as by using a higher-emissions scenario for climate change. Were the Commission to adopt this finding, it would retain its discretion to use varying rates of sea level rise when considering projects seeking permits. However, this finding sets the tone for using a precautionary approach to protect public safety from the potential impacts from climate change, particularly flooding. For shoreline protection proposals involving Bay fill the Commission is required by Section 66605(e) its law to ensure "That public health, safety, and welfare require that fill be constructed in accordance with sound safety standards which will afford reasonable protection to persons and property against the hazards of unstable geologic or soil conditions or of flood or storm waters..." The proposed policies seek to advance this public policy objective articulated by the legislature in a manner that provides the Commission with discretion and flexibility to address projects of varying scales, longevity and public safety risk factors. Regarding local variations of sea level rise compared to global patterns, scientists have concluded that these differences tend to average out and disappear over time as unique atmospheric and oceanographic conditions that give rise to the variation are eventually overcome by the larger force of eustatic sea level rise.
10. BCDC staff agrees that the approaches proposed by Moffat and Nichol for Treasure Island and for Candlestick Point/Hunters Point both in San Francisco are well-considered and provide good examples of adaptive management approaches to addressing sea level rise, particularly for development in low-lying areas that are vulnerable to sea level rise.
11. Comment noted. Please also see response to comment no. 8. Sea level rise is ongoing, and permit application including adaptation responses to sea level rise have been and will continue to be before the Commission and current policies to address these projects are needed. The Commission's current Bay Plan policies addressing sea level rise were adopted over 20 years ago and much has changed in that time. The proposed findings and policies provide for the application of the best scientific professional judgment on a site-specific basis. The economic feasibility of interventions is a factor that the Commission can and does consider as part of all of its permit decisions, however its responsibilities are set out in its law.
12. Finding l. has been re-lettered in the revised preliminary recommendation to be finding n. There is no need to make specific reference to these projects in the Bay Plan. BCDC staff, like the Bay Planning Coalition is actively involved in all three of these projects and hopes to use these as opportunities for applying the findings and policies proposed in this amendment.

13. The proposed changes to tidal marsh and tidal flat finding 1. moderate the ominous assessment of Bay sedimentation from the current finding, and recognize that local watersheds are key Bay sediment sources, consistent with the comment that sediment rates vary around the Bay. Staff is proposing further modify finding 1. to moderate the statement regarding the erosion of mudflats to be less predictive. Neither of these findings precludes property owners or flood control managers from participating in regional sediment management efforts.
14. Please see responses to John Bruno's Redwood City Salt Works letter, comment 3, Marin Audubon Comment No. 1, Save the Bay, Comment No. 6, Contra Costa County comment no. 3 and Santa Clara Valley Water District comment no. 6. The proposed policy 1 has been substantially modified and broken into two policies (climate change policies 1 and 3). The 100-year flood elevation referred to in the policy is developed and maintained by FEMA. The future flood elevation referred to in the policy requires the addition of projected sea level rise to these existing FEMA base flood elevations. The policy does not in any way extend the Commissions authority in shoreline areas beyond its existing public access and priority use authorities.
15. The characterization of FEMA's map modernization effort in this comment is consistent with our understanding and we agree that a cooperative effort to identify a 100-year flood elevation and a future flood level that incorporates sea level rise projections would be helpful.
16. See response to comment 14. The revised (new) climate change policy 3 provides that projects in undeveloped areas that require shoreline flood protection involving new fill in the Bay should not be allowed. In other circumstances, shoreline protection to protect against flooding can be allowed, provided that other applicable provisions of the Bay Plan are successfully addressed.
17. Please see response to Contra Costa County comment No. 5.
18. Staff agrees a collaborative approach to developing a regional planning strategy to address climate change and sea level rise is essential. Revised climate change policy 2 does not have a time table associated with it, and is not enforceable, so there is no guarantee that such a strategy will ever be developed. Certainly if such a regional planning effort is undertaken, it will be informed by the work that is happening now, and in the future at all levels of government and research.
19. Please see response to comment No. 5 of the Santa Clara Valley Water District. BCDC staff assisted in drafting the coastal sector section of the draft California Climate Adaptation Strategy and it is our belief that the proposed findings and policies are fully consistent with this draft strategy.
20. Comment Noted. Staff agrees that flexibility in planning for climate change adaptation, monitoring, application of good science and judgment, and continued dialogue are all essential.
21. Attachments provided from projects referenced in comments 10, 12 and 18 were for information only to illustrate points made in the comments. No further comment required.

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*Alameda County Public
Works Agency*

Ellen Joslin Johnck
Executive Director

July 14, 2009

Mr. Sean Randolph, Chairman and Commissioners
S. F. Bay Conservation and Development Commission
50 California Street
San Francisco, CA 94111

Attention: Will Travis, Executive Director

Subject: Draft Staff Report and Preliminary Recommendation for Proposed Bay Plan Amendment 1-08 Concerning Climate Change

Dear Travis,

The members of the Bay Planning Coalition and the Home Builders Association of Northern California are submitting this letter jointly. Collectively, as land and facility owners, we own and operate a wide range of maritime and related shoreline businesses and public works facilities serving commerce, industry and regional population needs for housing, transportation and recreation. We appreciate BCDC's leadership and extensive research to inform the public about rising sea levels as a result of climate change and global warming. BCDC's report, Living with a Rising Bay, is an important education tool. As responsible property owners and public officials, we plan and budget for essential maintenance and capital improvements to flood protection facilities to protect public health and safety. These are very tough land use and investment choices when considering sea level rise particularly in a time of fiscal crisis and the need to meter out precious dollars while balancing public safety with economic development and population services.

We are pleased to submit our recommendations to you on the proposed Bay Plan amendments.

I Action recommendations

- A. We urge the Commission not to adopt the Bay Plan amendments at this time.** A decision to adopt these amendments now is premature in light of the many comments submitted to date outlining several issues as well as the study now beginning to assess BCDC's functions and funding. Since the public hearing opened in May, several letters have been submitted containing many questions and requested changes. These need to be incorporated into a new staff report. Climate change is a major, and relatively new decisionmaking arena involving multiple private and public sector entities. It is vital that the Commission receive more input as described in 2. and 3. below and as further detailed in our specific comments on the findings and policies. Continuing dialogue is necessary for at least another six months.
- B. Compliance with Administrative Procedures Act (APA):** The Commission, were it to amend the Bay Plan, in amending the Bay Plan by adopting new policies on climate change, would intend these policies to be regulations and used through permit conditions in BCDC's permit process. We request that BCDC clarify in writing why it believes the proposed policies comply with the Administrative Procedures Act

(APA) and meet each of the APA's legal criteria for a regulation to be valid: necessity, legislative authority, clarity, consistency, reference and non-duplication.

C. **Study of BCDC functions:** BCDC should commence the study of its functions and potential sources of funding and the overall future governance of the Bay as outlined in the July 2, 2009 Staff Report. We recommend that the study be conducted by an independent and objective entity in order to avoid the appearance of a conflict of interest. The Little Hoover Commission recently completed a study of the state water boards, "Clearer Structure, Cleaner Water: Improving Performance and Outcome at the State Water Boards", and we suggest that you explore the idea of requesting the Little Hoover Commission to conduct the study. 4

D. **Workshops:** A series of workshops should be held to provide a forum for local government and other state and federal agencies with authority over the Bay and shoreline, private landowners and business to discuss climate change planning strategies and options. BPC will be pleased to assist BCDC with such a forum. 5

II. General Comments

A. **Multiple parties:** The subject of climate change as it affects sea level rise and planning strategies requires a more comprehensive discussion with local governments and other state and federal agencies, landowners and scientists. Ample opportunity should be afforded for all to identify and agree upon baseline values for sea level rise and adaptation strategies and options in a wide forum. 6

B. **Flexibility vs. prescriptive:** The proposed Bay Plan amendment language appears as an overly prescriptive approach which will not be workable and is not rational. There is a lot of temporal and spatial variability around the Bay to be considered and multiple private and public sector local, state and federal parties who have responsibility for planning and spending on adaptation strategies. Greater flexibility is needed. 7

C. **New study:** BCDC's permitting and planning role in climate change related to sea level rise should more appropriately be evaluated as an aspect of its forthcoming study on its functions, potential realignment of such, alternative sources of funding and overall future governance of S.F. Bay. 8

III Comments on Findings

A. Climate Change Findings:

We agree with the staff report's statement that a high degree of uncertainty currently exists in climate change and sea level rise predictions (**Climate Change Finding c.**). However, based on Finding C it appears that BCDC intends to rely on two numbers (a sea level rise increase of 16 inches by mid-century and 55 inches by 2100) on which to base its projections of vulnerability and development of adaptation strategies.

In the two public hearings thus far, Will Travis, the Executive Director, has stated that the Bay Plan amendment findings and policies are to serve as guidance only and not as a condition of permit approval. However, not only is the basis for these sea level rise values unclear, but also it is unclear how BCDC intends to use these particular sea level rise values. 9

We are concerned that they represent an overly prescriptive approach for worst-case scenarios rather than a more rational "middle of the road" expected outcome. For example, does BCDC intend to rely on these numbers to recommend and/or require that a specific protective strategy be installed or not? What decisionmaking criteria exist for determining the scope of financial investment a project sponsor should make

in a flood risk damage reduction strategy? Does BCDC intend to be the decisionmaker in this arena through these Bay Plan amendments?

Given the uncertainty of future sea level rise, rather, the emphasis should be on incremental steps and the application of rational and adaptive management strategies to fit specific local circumstances given the wide temporal and spatial variability at shoreline locations around the Bay. Important distinctions should be made between eustatic sea level rise, i.e. the global average value, versus local sea level rise which can greatly differ due to local variation. 9

We refer the staff and Commission to a document prepared by Moffatt & Nichol, an international coastal engineering firm, for the Treasure Island Community Development Project, in July, 2008. Part 1 "Planning for Sea Level Rise" contains a detailed analysis of estimates of sea level rise in the recent scientific and planning literature and outlines a development planning strategy for Treasure Island. We believe this is the type of base level analysis and recommended adaptive management strategy that should inform continuing discussion on adaptive management strategies in general. A similar planning report for the City and County of San Francisco's Hunter's Point community was also prepared by Moffatt & Nichol, and we quote three of the nine conclusions from the reports as follows: 10

- *"Rising sea levels is an ongoing phenomenon, and needs to be accounted for in the planning process. Estimates of SLR over the next 100 years range from an observed value of 8-inches (historical measurements), to 33-inches (IPCC maximum). Empirical methods put forth by Rahmstorf (2007) suggest a maximum allowance of 55-inches, which is what the CALFED Independent Science Board recommends as a high, but plausible, value.*
- *Development grades, as well as shoreline improvements, should take into account the effects of SLR to prevent the project from being mapped as a flood plain in the future. An allowance of 3 feet for finish floor elevations of buildings plus a freeboard of 6 inches is recommended, which would ensure that the structures are above even the high estimates of SLR. In addition, the shoreline and public access improvements should be designed to allow future increases in elevation to keep up with higher SLR values, should they occur.*
- *The approach to addressing SLR should be coordinated with relevant stakeholders including the City and County of San Francisco, State Parks, FEMA, and BCDC. The planning process should envision incorporating ongoing measurements of SLR from the scientific community into Monitoring and Adaptive Management Plans that would guide the decision making process for future improvements."*

Finding I: We agree that "there are multiple local, state, federal and regional government agencies with authority over the Bay and shoreline. *And that* Local governments have broad authority"... We support the concept to work "collaboratively...to plan amidst a high degree of uncertainty." This specific finding supports our view that BCDC should not be taking on climate change as it affects sea level rise unilaterally. It should not adopt Bay Plan amendments at this time so that it can pursue additional dialogue in a collective and collaborative manner with the other involved local private and public sector parties.

While we agree that adaptation strategies for sea level rise are something which must be developed, due to the number of entities with jurisdiction in this arena, planning should be conducted collectively relying on local districts and on-going sub-regional planning processes. This should enable the application of the best scientific professional judgment on a site-specific basis, along with full consideration of local prerogatives on determining the economic feasibility of certain strategies. 11

Finding I, as well as **Finding h,** should acknowledge and coordinate with the ongoing, sub-regional projects, such as the South Bay Salt Pond Restoration Project and the South San Francisco Bay Shoreline 12

Study, that are integrating tidal habitat restoration, flood protection and public access. BPC is an active participant in both this Project and Study which are incorporating sea level rise projections and could be used as an example of a planning strategy which could inform future regional planning. The above-mentioned Treasure Island Community Development Project should also be referenced.

Regarding the **Tidal Marshes and Tidal Flats Findings l and m** on sedimentation, we recommend that BCDC modify the language to remain open to other assumptions about sedimentation rates based on the experience of flood control managers and property owners. Sediment dynamics and fluctuations involve increasing, as well as decreasing, sedimentation rates depending on the conditions in specific locales around the Bay. 13

IV. Comments on Policy Amendments

A. Climate Change Section, Policy #1: This Policy states that the Commission should use (emphasis added) a "risk-averse scenario of sea level rise..." to: "(a) encourage new projects on the shoreline to be set back from the edge of the shore above a 100-year flood level that takes future sea level rise into account for the expected life of the project,... (b) discourage new projects that will require structural shoreline protection..." It is unclear what is BCDC's technical basis for its 100- year flood level elevation. The intent of the policy is also unclear and should be redrafted to clarify the intent or deleted. 14

For instance, "Is it the intent to define the shoreline as the inland interface of "100 year flood level that takes sea level rise into account" or at the existing shoreline or at somewhere in between? From a practical perspective, given a potential sea level rise up to 55 inches, a proposed setback from possible shoreline could affect existing development in areas north of highway 101 and could render these areas unbuildable. Local governments likely have land use plans for these areas and will be considering land use alternatives that will provide flood protection and allow for economic development. Local government decisions and multi-purpose planning should be factored into future regional policymaking on climate change.

Local flood protection agencies are addressing flood protection needed due to new mapping by FEMA and are spending substantial dollars on this important project. However it is our understanding that the FEMA mapping, that also includes a Bay/Tidal Study, takes into account storm surge, wave run-up, and storm water increases due to Delta storm flows, but does not include a factor for sea level rise. It would be helpful to have a cooperative effort to identify the 100-year flood level for insurance purposes and identify a future flood level that includes expected sea level rise. 15

Climate Change Policy #1 appears to establish a presumption against the use of shoreline protection for new development and appears to disallow the opportunity to design new development to address specific circumstances according to local needs. We do not support this view. 16

We are concerned about the general direction of Policy #1 as well as some of the other policies that upon reading them would restrict local flood protection districts from carrying out their maintenance responsibilities. Maintenance must be distinguished from capital planning for improvements of flood protection facilities. For example, Shoreline Protection Policy #1 (which, the Staff Reports, states is to be a companion to Climate Change Policy #1) states that "new shoreline protection projects and the maintenance of... should be authorized if the project is properly engineered...based on a 100-year flood event that takes future sea level rise into account...". This reads as if BCDC may disallow a shoreline improvement project for flood protection if it does not comply with these criteria. Again, the technical basis for these criteria is not clear. 17

B. Climate Change Policy #2. Planning for and developing regional climate change adaptation strategies should be accomplished through collaboration among local, regional, state and federal including private landowners. It may not be necessary to develop a regional planning strategy on climate change relative to 18

sea level rise at this time as there are ongoing sub-regional planning projects, mentioned above, already in process, and they should be given the opportunity to come to fruition, tested and monitored.

In addition there are other private development projects, such as Treasure Island and Hunter's Point projects that are addressing climate change and sea level rise. Moreover local flood control districts are working with FEMA to update maps for insurance purposes. Perhaps what is needed and would be helpful is to establish a forum for dialogue and review of ongoing local and site-specific programs. Such a forum would be useful to discuss the scientific and technical issues associated with identifying a 100-year flood elevation in various parts of the Bay.

Also we are concerned that BCDC's proposed Bay Plan findings and policies are premature and potentially conflict with the State of California's Climate Action program initiated by the Governor in his Executive Order issued last year. It is our understanding that there is an analysis being conducted by the National Academy of Sciences that will look at sea level rise values and land use planning and protection strategies. 19

V. Conclusions

Local government, special districts and private property owners need the flexibility to plan for adaptation strategies according to local conditions. We encourage a monitoring approach, allowing for good science and judgment to be applied, and continuing dialogue. BPC looks forward to working with you to identify appropriate roles for the future effective governance of San Francisco Bay related to climate change. 20

Sincerely yours,

Ellen Joslin Johnck
Executive Director
Bay Planning Coalition

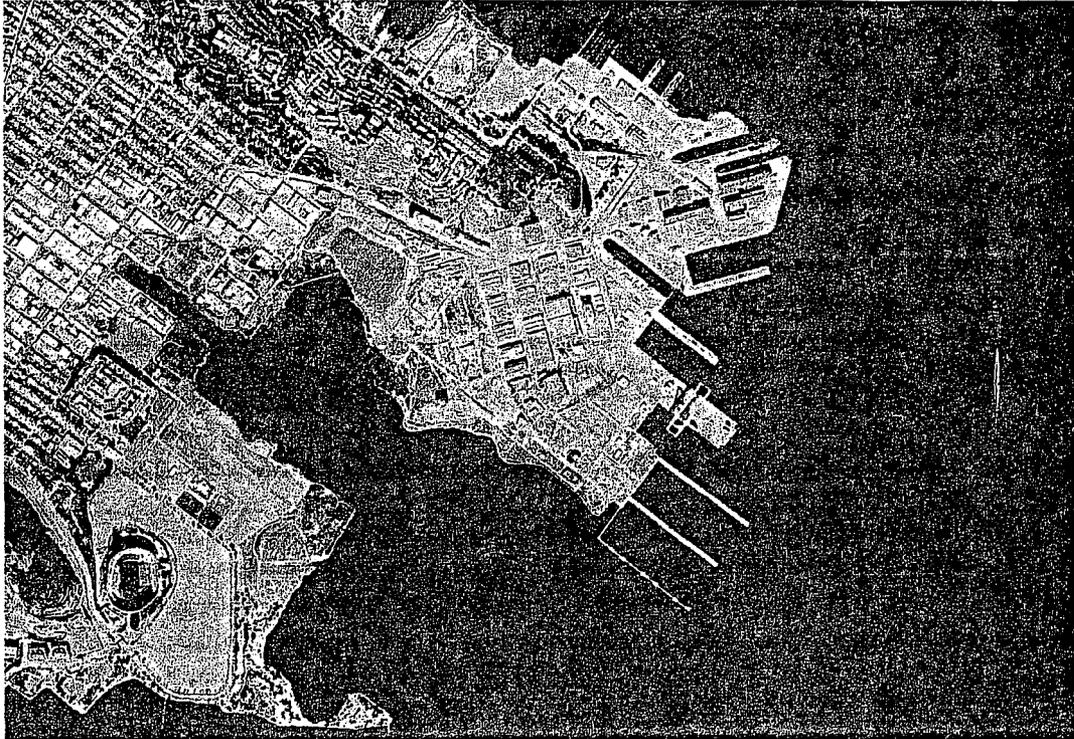
Paul Campos
General Counsel and Vice President of Governmental Affairs
Home Builders Association of Northern California

Enclosure

Cc: Colonel Janice Dombi, Commander, South Pacific Division, U. S. Army Corps of Engineers
LTC Laurence Farrell, District Engineer, San Francisco District, U. S. Army Corps of Engineers
Bruce Wolfe, Executive Officer, S. F. Bay Regional Water Quality Board
Sam Schuchat, Executive Director, California State Coastal Conservancy
Henry Gardner, Executive Director, ABAG
Mendel Stewart, Refuge Manager, S. F. Bay National Wildlife Refuge Complex
Steve Ritchie, Executive Project Manager, South Bay Salt Pond Restoration Project
Alexis Strauss, Director, Water Division, U. S. EPA Region IX
Dick Butler, Area Office Supervisor, NOAA Fisheries, Santa Rosa
Susan Moore, California Field Supervisor, U. S. Fish and Wildlife Service
Becky Ota, Senior Supervisor, Northern California, Ca. Dept. of Fish and Game
Woodrow Goins, Director, Federal Emergency Management Authority, Region IX
Steve Heminger, Executive Director, Metropolitan Transportation Commission
Bay Area Flood Protection Agencies Association
Jack Broadbent, Air Pollution Control Officer, BAAQMD

Candlestick Point/Hunters Point Development Project

Initial Shoreline Assessment



21

Prepared For:

Lennar Urban

49 Stevenson Street, Suite 600
San Francisco, CA 94105

Prepared By:



MOFFATT & NICHOL

2001 North Main Street, Ste 360
Walnut Creek, CA 94596

February 2009

M&N Job No: 6670

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APPENDIX A: Field Observations, Photographs, and Surveyed Sections

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specific values of sea level rise for illustration, not as scientific projections. The end-point values are given for comparison only.

Finally, the figure shows how sea level would increase if there were no acceleration, based on the current (1961-2003) global average increase of 1.8 mm/year (IPCC 2007).

Even with the most aggressive projection of sea level rise, the increase in sea level reaches 36 inches around 2075; for all projections other than Rahmstorf's high values, this increase is not reached until after 2100. (The NRC values are similar to Rahmstorf's, but those values were always intended to be illustrative).

4.5 RECOMMENDED STRATEGY FOR ADDRESSING SEA LEVEL RISE

Based on the above review and quantitative estimates of SLR for San Francisco Bay, we recommend that the proposed project allow for a rise in mean sea level of about 3 feet, and include that estimate in developing grading plans. This implies that finished floor elevations in the development areas should be at least 3 feet higher than present day Base Flood Elevation, preferably 3.5 feet higher to allow a ½ foot of freeboard.

The perimeter elevation should be raised to prevent coastal flooding associated with the 1% storm event for present day conditions, and shoreline development should be set back an adequate distance to allow elevation increases in the future (to account for SLR). The setback distance should be sufficient to allow future elevation increases along the perimeter of least 3 feet, and the ability to go even higher (up to the 55-inch estimate recommended by the CALFED committee) with either the same or a different structural configuration. This will ensure that the project will not be mapped as a FEMA flood zone either now or in the future when SLR could approach 3 feet.

Although the perimeter could be constructed high enough now to prevent future SLR, it would create a visual barrier for proposed public access uses for an as-yet-uncertain event, and is therefore not recommended. Instead, a *Monitoring Program* that uses mean sea level measurements as reported by the National Oceanic Atmospheric Administration should be put in place for the future, and an *Adaptive Management Strategy* should be implemented. For example, the Management Strategy could include 5- or 10-year updates based on a comparison between observed changes in sea levels and perimeter elevations to facilitate an appropriate, informed decision about raising perimeter grades.

6. FINDINGS AND RECOMMENDATIONS

1. In general, the site assessment indicates that a variety of shoreline edge conditions exist along the proposed project shoreline, many of which need to be improved from a coastal flooding perspective.
2. The topographic shoreline survey confirmed the results of the preliminary FEMA flood map, which showed low spots on the Hunters Point as well as Candlestick Point sites.
3. Statistical analyses of water levels indicate that a 100-year return period water level of 9.7 feet relative to MLLW datum, which is analogous to the Base Flood Elevation (BFE) defined by FEMA, would be appropriate to use for design grades away from the shoreline for present conditions (SLR allowance to be above and beyond the BFE).
4. Wind wave induced runup will result in coastal flooding along much of the shoreline areas unless raised sufficiently. The required freeboard above BFE to prevent overtopping varies from 2 feet in the sheltered areas (beaches, marshes, and landward extents of drydocks), to as much as 5 feet in the exposed areas.
5. Rising sea levels is an ongoing phenomenon, and needs to be accounted for in the planning process. Estimates of SLR over the next 100 years range from an observed value of 8-inches (historical measurements), to 33-inches (IPCC maximum). Empirical methods put forth by Rahmstorf (2007) suggest a maximum allowance of 55-inches, which is what the CALFED Independent Science Board recommends as a high, but plausible, value.
6. Development grades, as well as shoreline improvements, should take into account the effects of SLR to prevent the project from being mapped as a flood plain in the future. An allowance of 3 feet for finish floor elevations of buildings plus a freeboard of 6 inches is recommended, which would ensure that the structures are above even the high estimates of SLR. In addition, the shoreline and public access improvements should be designed to allow future increases in elevation to keep up with higher SLR values, should they occur.
7. The approach to addressing SLR should be coordinated with relevant stakeholders including the City and County of San Francisco, State Parks, FEMA, and BCDC. The planning process should envision incorporating ongoing measurements of SLR from the scientific community into Monitoring and Adaptive Management Plans that would guide the decision making process for future improvements.
8. Although several potential improvement concepts are possible along the project shoreline, their feasibility needs to be assessed from the standpoint of slope stability, functionality, and regulatory issues. The high cost of shoreline improvements along the structural portions of the project in particular requires that the structural integrity first be evaluated. Also, the implications to allowable setbacks for development use can be significant depending on the feasibility of structural improvements.
9. Parcels B, C and D along the Hunters Point shoreline have structural treatments that include embankments with debris (which provides some shore protection), pile-

supported wharves, and concrete or steel bulkheads. Based on visual observations, it is apparent that further investigation is needed into the construction type and structural integrity of the waterfront structures within these parcels. This includes research and review of available "as-built" and "record drawings" of the structures for information related to type and age of structure as well as dimensions of various design elements. This should be supplemented with a field investigation of the structures on both the landside and waterside via underwater and boat inspection. Based on this supplemental investigation, the potential for continued use, upgrade, repair or replacement could be assessed.

10. Parcels E, E2, and the Candlestick shoreline offer the opportunity of incorporating greater public access and use along the waterfront. The shallow water depths and mudflats fronting these portions of the project shoreline make it possible to incorporate a more *eco-friendly* approach to shoreline rehabilitation. These can potentially include tidal wetlands, beaches, stormwater treatment wetlands, and softer vegetated banks as opposed to conventional revetments or seawalls.

Comments from the May 7, 2009 Public Hearing	
Public Comment	Staff Response
David Lewis, Save the Bay. Mr. Lewis made comments consistent with those in Save the Bay's May 7, 2009 letter.	Please see responses to comments in Mr. Lewis' Save the Bay letter of May 7, 2009.
Arthur Feinstein, Citizen's Committee to Complete the Refuge and Sierra Club, San Francisco Bay Chapter. 1. Mr. Feinstein comments agreed with Mr. Lewis comments from Save the Bay. 2. He noted that much of the public does not take climate change seriously, and was grateful that BCDC staff was addressing it. 3. He said tidal marsh and tidal flats policy 6 should have additional language to encourage local governments to protect upland areas that are available for marsh migration and discourage development there. 4. He questioned whether the climate change finding that identifies the Joint Policy Committee (JPC) as a body capable of guiding preparation of regional adaptation strategy was appropriate, because there are no resource agencies on the JPC. 5. He noted that on page 63 of the background report, the map shows a priority development project in Newark that is within the acquisition boundaries of the San Francisco Bay National Wildlife Refuge. He said development there is inappropriate, because it will be under water in the future, and he would like to see it become part of the Refuge.	1. Please see responses to comments in Mr. Lewis' Save the Bay letter of May 7, 2009. 2. Comment noted. 3. Tidal marsh and tidal flats policy 4 already has language that encourages local governments to maintain land use and tax policies that do not lead to the conversion of restorable lands to uses that would preclude or deter potential restoration. 4. BCDC is an agency charged with protecting San Francisco Bay, and it sits on the JPC. Any regional strategy for adapting to sea level rise in San Francisco Bay will require the close involvement of the resource agencies as advisors. The resource agencies have federal and state powers and authorities that can in some cases overrule the decisions of local and regional entities when those decisions would compromise resources protected by federal or state resource agencies. 5. When the Newark priority development area was adopted by the Joint Policy Committee, BCDC was not a voting member of that body. However, if the area is approved for development at the local level, some portion of the project may be in BCDC's managed wetlands jurisdiction, in which case, that portion of the project would have to comply with BCDC's applicable Bay Plan policies, including any climate change policies in force and effect.
Ellen Johnck, Bay Planning Coalition. 1. Ms. Johnck made comments consistent with the Bay Planning Coalition's July 14, 2009 letter, in part, and requested that the Commission extend the public hearing by about 30 days to allow more time for comment. 2. She noted that there was much more information available now than 20 years ago, that sea level rise would be variable throughout the Bay and this cascade of new information made setting conservative targets unwise, and recommended that a 3.5 foot sea level rise projection for planning was prudent. 3. She supported development of a regional adaptation strategy, provided that the process	1. Please see staff responses to Bay Planning Coalition's July 14, 2009 letter. The Commission extended the public hearing until June 4, 2009. 2. The Commission is not adopting a sea level rise projection at this time. The proposed amendment includes a finding that cites the most conservative scientific consensus projection (4.5 feet by 2100) at this juncture. It is not a prescriptive finding. 3. Comment noted. Comments 4 and 5. Please see response to Bay Planning Coalition July 14, 2009 letter. 6. The revised staff preliminary recommendation, climate change policy 2 includes the initiatives recommended by Ms. Johnck.

Comments from the May 7, 2009 Public Hearing	
Public Comment	Staff Response
was inclusive of a wide variety of federal, state and local agencies and interests. 4. Bay Plan policies should not be amended before adoption of a regional strategy. 5. Bay plan policies should encourage, not discourage shoreline protective measures. 6. A regional sea level rise adaptation strategy should address a range of co-benefits from regional sediment management.	
Michelle Jespersen, California State Coastal Conservancy. Ms. Jespersen made comments consistent with the Conservancy's letter of May 7, 2009.	Please see staff response to State Coastal Conservancy letter of May 7, 2009
Comments from the June 4, 2009 Public Hearing	
Public Comment	Staff Response
David Lewis, Save the Bay. 1. Mr. Lewis made comments consistent with those in Save the Bay's May 7, 2009 letter. 2. Mr. Lewis amplified comments in the May 7 letter regarding desired clarifications in proposed climate change policy 1 that address what BCDC will encourage and discourage along the shoreline. 3. In response to questions from Commissioner Golzband, Mr. Lewis opined that the Commission should control the process for planning for sea level rise in San Francisco Bay, rather than subordinating the outcome to a Joint Policy Committee consensus, and suggested that the Commission can plan without having the products of that planning incorporated into the Bay Plan.	1. Please see responses to comments in Mr. Lewis' Save the Bay letter of May 7, 2009. 2. Please see staff response 1 to comment 1 in John Bruno's DMB letter of May 6, 2009. 3. The staff recommends that a regional adaptation strategy be developed in cooperation and collaboration with the Joint Policy Committee, and it agrees with Mr. Lewis statement that planning work undertaken by the Commission need not be incorporated into the Bay Plan.
Comments from the July 16, 2009 Public Hearing	
Public Comment	Staff Response
Ellen Johnck, Bay Planning Coalition. 1. Ms. Johnck made comments consistent with those in the joint letter from Bay Planning Coalition and the Home Builders Association of Northern California dated July 14, 2009. 2. In response to a question from Commissioner McGrath, Ms. Johnck clarified that BPC members were concerned that the projections of 16 inches by 2050 and 55 inches by 2100 were prescriptive and would be used as the only basis for evaluating adaptation strategies.	1. Please see responses to comments in Bay Planning Coalition's July 14, 2009 letter. 2. Please see response to Ms. Johnck's May 4, 2009 public hearing comment 2.

Comments from the July 16, 2009 Public Hearing	
Public Comment	Staff Response
<p>Bob Glover, Homebuilder's Association of Northern California. 1. Mr. Glover made comments consistent with those in the joint letter from Bay Planning Coalition and the Home Builders Association of Northern California dated July 14, 2009.</p>	<p>1. Please see staff's response the comments in the joint letter from Bay Planning Coalition and the Home Builders Association of Northern California dated July 14, 2009.</p>
<p>Margaret Kettunen Zegart, Tamalpais Planning and Bay Front Coalition. 1. Ms. Zegart mentioned existing flooding problems in Mill Valley, including on Highway 1 their primary access road. 2. She recommended that the Commission include Caltrans and County public works agencies in any regional sea level rise planning. 3. She urged the Commission to strengthen its at-risk adverse planning for projects now. She expressed concern about the phrase "lifetime of the project" and encouraged the Commission not to downplay the risks.</p>	<p>1. Comment Noted. Ms. Zegart's observations confirm the staff's vulnerability assessment maps. 2. The staff recommends that the Commission include Caltrans and county public works agencies as well as myriad other agencies in the development of a regional adaptation strategy. Please see proposed climate change policy 2. 3. The staff has recommended that the Commission adopt a policy that recognizes the importance of using a precautionary principle in planning for vulnerable shoreline areas (please see proposed climate change policy 3).</p>