

Bay Area Flood Protection Agencies Association

Agenda Item #9

November 16, 2010

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

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

Dear Mr. Travis:

On June 16, 2010, the Bay Area Flood Protection Agencies Association provided comments to the Bay Conservation and Development Commission (BCDC) on the proposed Bay Plan Amendment on climate change. BCDC has made significant changes to the proposed Bay Plan Amendment since those comments were submitted. In reviewing the subsequent changes to the Bay Plan Amendment, the Bay Area flood protection agencies have some additional comments. Those comments are indicated below and are solely from the Bay Area Flood Protection Agencies Association.

I. Tidal Marshes and Tidal Flats Section

1. **Restoration Projects.** Policy 6 (Prior policy 5) has changed "tidal" restoration projects to "ecosystem" restoration projects. With this more expansive descriptor of restoration projects, it is presumed that creek restoration projects within the jurisdiction of BCDC would also be included.
2. **System Analysis.** Policy 6 also indicates that design and evaluation of a project should include analysis of how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change. How will BCDC interpret and define "system"? What "system" is contemplated and how big could this be? A system analysis on a creek restoration project could include the entire creek system within the entire watershed. Conversely "system" could be interpreted to be the entire Bay system. We believe the intent is to evaluate the project's adaptive capacity, in which case the word "system" should be changed to the word "project". With this language the project would be evaluated for its adaptive capacity. A system-wide analysis should be the purview of BCDC or some other large agency; even a large project would have a difficult time doing a system-wide

analysis.

3. **Sediment Budget.** Policy 6 also indicates a project should analyze the impact on the Bay's sediment budget. The question here is also of scale. This is a reasonable requirement if the impact is limited to the work of the project. For example, is there a change in sediment production from the creek banks or floodplains within the project limits? However, if there is a need to determine the sediment in the water flowing from the creek, that is a much more involved analysis. Creek restoration projects and flood control projects are by nature part of a system that provides sediment to the Bay; a simple creek restoration project should not be required to conduct a watershed level sediment study to identify the sediment production of the watershed.

Taken from a larger context, sediment balance needs to be better coordinated. Flood protection agencies have to remove sediment from the lower reaches of their channels and haul it to a disposal site while there is a need for sediment in the Bay to preserve and restore tidal marshes and wetlands. Why do flood control channels fill up with sediment instead of transporting it out to the Bay? In many cases these flood control channels were built at a time when dredging was cheap and a standard, regular maintenance practice, channels were designed with a flat, wide bottom and no low flow channel, and designed and built to intersect the Bay below bay level. In short they are sediment traps. How do we re-engineer these facilities to transport sediment through the system and provide sediment to the Bay? The channels need to be much wider with a low flow channel to transport sediment, and floodplains with adequate storage capacity for flood flows. To achieve this, in most cases, requires a redesign of the surrounding community to allow enough setbacks of structures along the creek. As we rethink our community design to adapt to sea level rise and climate change, the needs of a sustainable creek flood protection system should be included and integrated into the overall vision and strategy.

II. Climate Change Section

1. **Corps Vegetation Policy.** Finding H and J and Policy 5c discuss maximizing compatibility with an integration of natural processes and using natural Bay habitat for flood protection. These natural systems point to using vegetation to attenuate the impacts of sea level rise and large storm flows. The Army Corps of Engineers has a Vegetation Policy that may be in conflict with the intent of this strategy. The Corps Vegetation Policy states that no vegetation (other than grass) may be allowed on any flood control

levee originally built by the Corps. This policy to remove all vegetation along Corps funded levees seems counter to BCDC's vision of having communities protected with natural systems utilizing vegetation. The Corps Vegetation Policy impacts 3,000 miles of levees in California, although it's uncertain how many miles would be within BCDC's jurisdiction. It should be noted that the flood protection agencies in the Bay Area and throughout the State are opposing this policy and we can provide you with much more information on this topic if you are interested.

2. **Minor Repairs and Small Projects.** Policy 2 and Policy 6 identify "minor repairs" and "small projects" as exempt from the risk assessment and imposed limitations prior to adoption of all adaptation strategy. The Bay Area flood protection agencies agree with identifying minor repairs and small projects and treating them different than new projects. However, we are concerned about the future interpretation of these terms. Minor repairs should include all maintenance activities performed by Bay Area flood protection agencies. By the same token, some discretion should be utilized in defining small projects. For example, a project that will fill a gap in an existing flood protection system or the last phase of a multi-phased project in itself may be an expensive project. However, in the context of the flood protection system or the total multi-phased project it would be considered a small project. FEMA is also requiring levee owners to certify their levees meet FEMA standards. This effort to certify a levee may result in a flood protection agency needing to upgrade their levee. For example, the Contra Costa County Flood Control District is spending over \$500,000 to do the engineering work necessary to determine if their levees on Wildcat Creek and San Pablo Creek meet FEMA standards. This work is scheduled to be completed in April. When the engineering work is completed it will probably indicate some improvements will be needed to bring the levees up to FEMA standards. These levees were built by the Corps in the mid 1980's, so hopefully the improvements will be fairly minor. It is conceivable, however, that the cost to upgrade the levees may be over \$1 million. This type of project should be considered a small project in BCDC's Bay Plan Amendment, even though a \$1 million may seem like a significant amount of funds and therefore not a "small" project.

The perspective of BCDC in developing the Bay Plan Amendment is through the lens of their jurisdiction, a band of wetlands and land around the Bay shoreline. Flood protection agency projects enter that band at various drainage points along the Bay shoreline. Our perspective and interest is not circumferential as is BCDC's but is point specific at the mouth of a creek or stream. Our interest and concern is how the Bay Plan Amendment will impact our work in the watershed beyond that point of entry and

Will Travis
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our work at the point of entry along the shoreline.

The Bay Area Flood Protection Agencies agree with BCDC on the need to develop a strategy for adaptation to sea level rise and climate change. This is an issue that will have a direct and far reaching impact to flood control agencies as well. Our request is that we be included in the development of the adaptation strategy. If you have any questions please contact Mitch Avalon at (925) 313-2203.

Sincerely,



for Michael Thompson, Chair
Bay Area Flood Protection Agencies Association



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November 29, 2010

SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

BAY CONSERVATION AND DEVELOPMENT COMMISSIONERS
c/o Will Travis
Executive Director, BCDC
50 California Street, Suite 2600
San Francisco, California 94111

Re: Proposed Bay Plan Amendment 1-08

Dear Bay Conservation and Development Commissioners:

Thank you for responding to earlier requests from the East Bay Economic Development Alliance (East Bay EDA) and others to postpone your scheduled December 2nd vote on the proposed Bay Plan Amendment. We appreciate your keeping the process open for several additional months to ensure that cities like ours are able to more fully consider and respond to the proposed changes to the Bay Plan.

We support and applaud the efforts of the Commission to address the issues of Climate Change and the potential impacts of a rising sea level and we appreciate that the Commission has been working on this issue for the past two years. At the same time, **we continue to be concerned that the proposed changes to the Bay Plan related to sea level rise would have:**

1. The force of binding federal law under the Coastal Zone Management with respect to any project or activity involving a federal permit or assistance (including financial assistance, insurance, and/or guarantees); and
2. Significant regulatory impact under the California Environmental Quality Act.

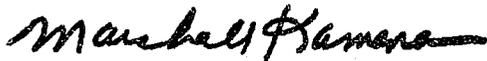
As one of the local jurisdictions responsible for local land use decisions in the East Bay, we would like to respectfully request that you **adopt any final sea level rise language as a stand-alone policy guidance document with a clear statement of intent that the policies are advisory only.** We understand that there is precedence for this approach, as BCDC previously has adopted such guidance documents entitled *Shoreline Spaces: Access Design Guidelines for the San Francisco Bay* and *Shoreline Signs: Public Access Signage Guidelines.*

Mr. Will Travis
November 29, 2010
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The East Bay EDA has submitted recommended changes to the proposed policies, prepared by their attorneys from Bingham McCutchen, LLP, in a stand-alone guidance document tentatively titled "Guidance to Local and Regional Agencies for Adapting to Sea Level Rise." We urge you to consider this language as a viable alternative to the proposed changes to the Bay Plan itself.

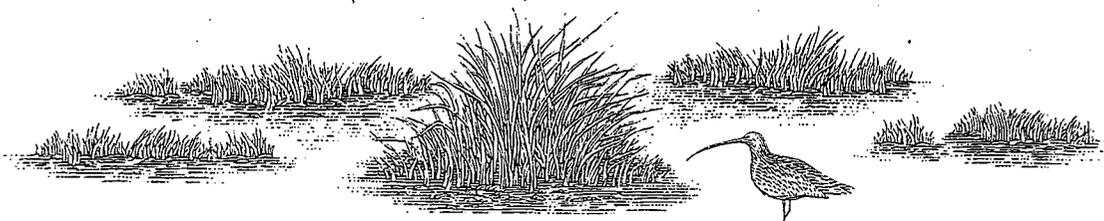
Again, thank you for providing time for additional discussions on the proposed policies relating to sea level rise. We appreciate BCDC's stated intent of offering guidance language and information to cities like ours to help us prepare for the impacts of climate change and the rise of sea levels. We look forward to working with you and the East Bay EDA, our regional economic development intermediary, on this issue.

Sincerely,



Dr. Marshall Kamena
Mayor

cc: Linda Barton, City Manager
Marc Roberts, Community Development Director
Rob White, Economic Development Director



MARIN BAYLANDS ADVOCATES



P.O. BOX 2598

MILL VALLEY, CALIFORNIA 94942

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

Chairman Sean Randolph
Bay Conservation and Development Commission
50 California Street, 26th Floor
San Francisco, CA 94111

RE: CLIMATE CHANGE POLICIES

Dear Chairman Randolph and Commissioners:

Marin Baylands Advocates writes to express our strong support for BCDC staff proposed Climate Change Amendment 1-08. The San Francisco Bay ecosystem can only persist to benefit wildlife, other natural resources, and future generations if marshes and associated upland buffers/transition zones are maintained.

Particular policies that are vital to sustain the Bay ecosystem:

- 1) promote protection of shoreline areas that currently sustain diverse habitats and species and that would allow for inland migration of wetlands to address adverse impacts of climate change, including inundation of existing marshes,
- 2) call for maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands, and
- 3) limit new development in vulnerable shoreline areas to ensure adequate area for landward migration of marshes as sea level advances.

Marin Baylands Advocates works to ensure the permanent protection of current and former baylands because of their habitat and other values for the Bay ecosystem. Thank you for not caving into development interests.

Sincerely,

Susan Ristow
Board Member





Marin Audubon Society

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

November 30, 2010

Sean Randolph, Chair
Bay Conservation and Development Commission
50 California Street, 26 Floor
San Francisco, CA 94111

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

ATT: JOE LE CLAIR

RE: PROPOSED BAY PLAN AMENDMENT FOR CLIMATE CHANGE

Dear Chairman Randolph:

The Marin Audubon Society writes again to emphasize the importance of adopting strong policies to protect the Bay Ecosystem from the impacts of climate change. The proposed policies are based on sound science and have been deliberated for two years. It is time they be approved.

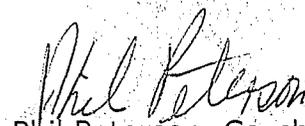
We consider the proposed policies to be a compromise that allow for some limited development but provide for protecting of the Bay resources, its wetlands, wildlife, fish populations, air quality, etc. It is especially important that BCDC stand firm on limiting further development to ensure that there is adequate area for migration of marshes and that transition/buffer zones are protected to maintain endangered species.

It is not only in the interest of protecting Bay resources to adopt and implement strong Climate Change policies, it is also in the interest of public safety. Placing development the path of a rising sea threatens the safety of the people using the development.

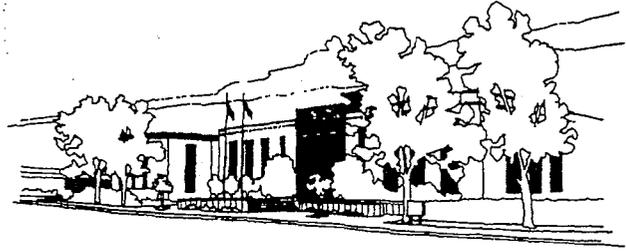
The future of the Bay depends on you. Thank you for adopting the proposed policies.

Sincerely,


Barbara Saizman, Co-chair
Conservation Committee


Phil Peterson, Co-chair
Conservation Committee

City of San Leandro
Civic Center, 835 E. 14th Street
San Leandro, California 94577



Office of the Mayor 510-577-3356
FAX 510-577-3340

November 30, 2010

BAY CONSERVATION AND DEVELOPMENT COMMISSIONERS
c/o Will Travis
Executive Director, BCDC
50 California Street, Suite 2600
San Francisco, California 94111

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

Subject: Proposed BCDC Bay Plan Amendments on Climate Change

Dear Bay Conservation and Development Commissioners:

Thank you for responding to earlier requests from the City of San Leandro and others to postpone your scheduled December 2 vote on the Bay Plan Amendment. We appreciate your keeping the process open for several additional months to ensure that cities like ours are able to more fully consider and respond to the proposed changes to the Bay Plan.

We support and applaud the efforts of the Commission to address the issues of Climate Change and the potential impacts of a rising sea level and we appreciate that the Commission has been working on this issue for the past two years. At the same time, we continue to be concerned that the proposed changes to the Bay Plan related to sea level rise would have:

1. The force of binding federal law under the Coastal Zone Management Act with respect to any project or activity involving a federal permit or assistance (including financial assistance, insurance, and/or guarantees); and
2. Significant regulatory impact under the California Environmental Quality Act.

As one of the local jurisdictions responsible for local land use decisions in the East Bay, we would like to respectfully request that you refrain from making changes to the Bay Plan itself and, alternatively, adopt any final sea level rise language as a stand-alone policy guidance document with a clear statement of intent that the policies are advisory only. This approach is consistent with Option #6 in BCDC's November 12 staff report. We understand that there is precedence for this approach, as BCDC previously has adopted such guidance documents entitled Shoreline Spaces: Access Design Guidelines for the San Francisco Bay and Shoreline Signs: Public Access Signage Guidelines.

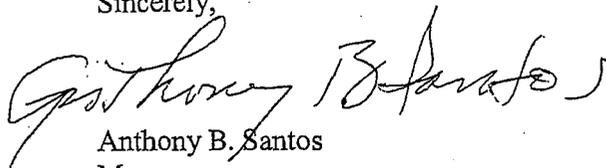
It has come to our attention that attorneys from Bingham McCutchen, LLP have drafted such a stand-alone guidance document tentatively titled "Guidance to Local and Regional

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Agencies for Adapting to Sea Level Rise.” We have reviewed this submission and are in agreement with the suggested text and approach. We urge you to consider this language as a viable alternative to the proposed changes to the Bay Plan itself.

Again, thank you for extending the time for discourse on the issue of sea level rise. We appreciate BCDC’s stated intent of offering guidance language and information to cities like ours to help us prepare for the impacts of Climate Change and the rise of sea levels. We look forward to working with you and the East Bay EDA, our regional economic development intermediary, on this issue.

Sincerely,

A handwritten signature in black ink that reads "Anthony B. Santos". The signature is written in a cursive style with a large, sweeping initial "A".

Anthony B. Santos
Mayor

cc: BCDC Executive Director Will Travis
BCDC Chief Planner Joe LaClair
East Bay EDA, Karen Engel

WCCTAC

West Contra Costa Transportation Advisory Committee

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

El Cerrito

December 1, 2010

Via Electronic Mail

Hercules

Mr. Joe LaClair
San Francisco Bay Conservation & Development Commission
50 California Street, Ste 2600
San Francisco CA 94111

Pinole

RE: Comments on Proposed Bay Plan Amendment 1-08 Concerning Climate Change

Dear Mr. LaClair:

Richmond

Thank you for the opportunity to review the proposed amendment and the background document, *Living with a Rising Bay*. WCCTAC is a joint powers authority formed by the five cities in western Contra Costa, the County, and the public transit agencies that serve those communities to protect and advance the area's cross-cutting transportation interests, including stewardship of county transportation sales tax funds that flow to the area.

San Pablo

Based on the background document, the projected sea level rise may result in significant adverse impacts on transportation in the I-80 corridor through Contra Costa, in particular on the Capitol Corridor that feeds into the BART system; the priority development areas in Richmond, North Richmond, Pinole, Hercules, and along San Pablo Avenue; ferry planning efforts in Hercules and Richmond; and the Bay Trail. The same would be true in general for the large low-income population in the area, and the economic viability of existing and planned shoreline developments. We appreciate BCDC's thoughtful analysis, and are eager to help in the development of mitigation and adaptation strategies to address these impacts in the context of preserving the Bay and protecting its habitats. To that end, we offer the following comments:

Contra Costa
County

AC Transit

BART

WestCAT

1. Regarding Climate Change Policy #5, we would like to underscore the importance of thoroughly vetting the regional sea level rise adaptation strategy with the affected local governments to ensure that their objectives for shoreline development and supporting infrastructure receive ample hearing and consideration. We recommend that the local agencies be involved at the outset and throughout the development of the adaptation strategy, and to the extent feasible, that the schedule for development of the strategy accommodate time for the local agencies to vet proposals with their constituents. In evaluating affected transportation infrastructure and projects, local involvement is key because these are, in many cases, tied to local, voter-approved sales tax measures.
2. Regarding Climate Change Policy #5, please add as one of the goals of the adaptation strategy to limit impacts to low-income communities and provide viable alternatives if displacement is necessary to advance public safety.

3. Regarding Climate Change Policy #5, we strongly support the adaptation strategy goals pertaining to integration with the Sustainable Communities Strategy and FOCUS initiatives (5f); encouraging sustainability, infill development and job creation, and providing diverse housing served by transit (5g); and identifying mechanisms to provide information, tools, and financial resources to local governments to integrate adaptation planning into local processes (5k).
4. Regarding Climate Change Policy #6b, please revise as follows: *[New projects should be limited to...] transportation facilities, public utilities...that are necessary for the continued viability of existing development and/or the advancement of priority development areas.*
5. Regarding Climate Change Policy #6c, please revise as follows: *[New projects should be limited to...] infill development, including priority development areas, within existing urbanized areas that contain existing or programmed development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place.*

The WCCTAC Board is scheduled to discuss the proposed Bay Plan Amendment on December 10, at which time additional comments may be forthcoming. We are submitting these comments in advance in the hope that they will be considered as part of the Commission's Dec. 2 deliberations. Please feel free to contact me if you have any questions regarding our comments.

Sincerely,



Christina M. Atienza
Executive Director

cc: Supervisor John Gioia
Councilman Ed Balico
Supervisor Gayle Uilkema
Randy Iwasaki



OFFICE OF THE CITY MANAGER

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

December 1, 2010

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

RE: Proposed Bay Plan Amendment 1-08

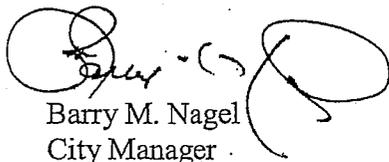
Dear Mr. Randolph and Mr. Travis:

On behalf of the City of South San Francisco, thank you for the opportunity to provide comments on BCDC's proposed amendments to the Bay Plan. While the City continues to have concerns with some of the specific language in the current proposal, overall we remain very supportive of efforts to develop a long-term regional strategy to address climate change and sea level rise, and commend BCDC for taking a proactive approach in this matter.

Attached are specific recommendations on language changes that would alleviate the City's concerns with the draft Plan Amendment. In general, the City's modifications seek to clarify BCDC's jurisdiction within the 100 foot shoreline band versus outer areas, recognize the critical importance and need to work collaboratively with other agencies and stakeholders on a regional strategy to address climate change, and clarify that in the interim, until a regional strategy is completed, the measures contained in the policy are advisory only.

We look forward to continued cooperation in addressing this critical issue, and again thank you for consideration of our concerns and recommendations.

Sincerely,



Barry M. Nagel
City Manager

enclosure

South San Francisco Comments on Bay Plan Amendment No. 1-08

Proposed Changes to "Revised Preliminary Recommendation for Proposed Bay Plan Amendment 1-08"

[Additional text is underlined, deleted text is shown with a ~~strike~~through]

Add underlined language as follows:

- o. Approaches for ensuring public safety in developed vulnerable shoreline areas through actions and regulations by local governments may include: (1) protecting existing development; (2) accommodating flooding by building structures that are resilient; (3) discouraging permanent new development unless the buildings are resilient; and (4) allowing only interim new uses that can be removed or phased out as inundation threats increase, and (5) removing existing development.
- t. 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. The legislature enacted AB 2094 in 2008, which directed the Commission to work with local governments, regional councils of government, and other agencies and interested parties, to develop regional strategies, as needed, for addressing the impacts of, and adapting to, the effects of sea level rise and other impacts of global climate change on the San Francisco Bay and affected shoreline areas.

Add underlined language as follows:

- v. The Commission's ~~current~~ legal authority and regulatory jurisdiction, ~~which were created for the limited purposes of to~~ allowing the Commission to advance the State goals of preventing unnecessary filling of the Bay and increasing public access to the Bay shoreline. To effectuate those goals, the Commission has permitting jurisdiction over activities that involve fill to the Bay and projects within 100 feet of the existing shoreline. Within its 100 foot "band" jurisdiction, the Commission's jurisdiction is limited solely to ensuring adequate public access to the Bay shoreline. The Commission recognizes that it has no regulatory authority over areas vulnerable to future shoreline flooding that are further than 100 feet from the existing shoreline. Accordingly, to the extent that Policies affect areas beyond the reach of the Commission's authority, particularly Policies 5 and 6, they are presented in the interest of contributing to a dialogue on how the Bay region may respond to sea level rise, until a regional sea level rise adaptation strategy can be completed in consultation with the Metropolitan Transportation Commission, the Association of Bay Area Governments, and the affected cities and counties, and other stakeholders. In such areas, these suggestions do not have any legal force or effect under the McAteer-Petris Act, the California Environmental Quality Act, the state Planning and Zoning Law, the Coastal Zone Management Act, or any other statute. Specifically, the CEQA Guidelines require that an EIR discuss any inconsistencies between a project and "applicable" regional plans, such as the Bay Plan. Because the Bay Plan has no legal effect outside of the Commission's jurisdiction, it is not an "applicable" plan under CEQA, 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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation.

Add underlined language as follows:

5. As directed by AB 2094, 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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.

The Commission recognizes that the adaptation strategy will be a collaborative effort and other agencies and stakeholders will bring their own priorities, goals and strategies. The strategy should incorporate an adaptive management approach, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared and

regularly updated in consultation with government agencies with authority over flood protection.

The Commission recommends that the regional strategy should determine where existing development should be protected and infill development encouraged, where new development should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland. The Commission recognizes that these are extremely difficult policy decisions and must be made only after considering input from many stakeholders, including local governments, property owners, and the affected public.

The Commission recognizes that the goals of the strategy will be developed through the collaborative process, including considerations and goals proposed by other agencies and stakeholders. The following outlines the Commission's initial recommendations for goals of the strategy, but these goals will have no legal force or effect on the adaptation strategy, which will undergo a separate process in conjunction with other regional and local agencies and interested parties. The Commission's preliminary view is that goals of the strategy should be to:

- a. advance regional public safety and prosperity by protecting ~~most existing~~ shoreline development to the maximum extent feasible, especially 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, major parks, recreational areas and trails;
- b. to the extent feasible, while recognizing that the value of preserving the built environment may at times outweigh the value of preserving ecosystems, enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;
- c. integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;
- d. encourage innovative approaches to sea level rise adaptation;
- e. identify a framework for integrating the adaptation responses of multiple government agencies;
- f. integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;
- g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;
- h. address any existing contamination and the implications of the contamination on water quality;
- i. support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;
- j. identify actions to prepare and implement the strategy, including any needed changes in law; and
- k. identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.

Add underlined language as follows:

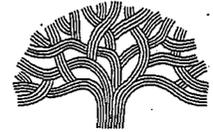
6. Until a regional sea level rise adaptation strategy can be completed in consultation with the Metropolitan Transportation Commission, the Association of Bay Area Governments, and other stakeholders, and enacted by statute, when evaluating planning or regulating proposed new development in areas determined by the governmental agency

having authority over the approval to be vulnerable to future shoreline flooding, the Commission should consider, and encourages local governments to consider new projects should be limited to: whether the proposal will be resilient to flooding and adaptive to climate change impacts, and whether the proposal is one of the following categories of use adopted regional sea level rise adaptation strategy). These are suggestions for governmental authorities to consider, but are not binding on any governmental authority or future proposed project, plan, or program and do not in any way affect the land use regulatory authority or other legal obligations of any governmental authority. This Policy shall not be interpreted to affect any vested right whether created by statute or by common law nor shall it require a city's or county's land use policies and regulations, including its general plan, to be consistent with these Policies. The Commission's intention is that the regional sea level rise adaptation strategy identified in Policy 5 will be the primary vehicle for the region's planning for adapting to sea level rise and that the following suggestions be considered by governmental authorities on an interim basis.

- a. ~~minor~~ repairs of existing facilities or ~~small~~ projects that do not increase risks to public safety;
- b. transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing and currently proposed development;
- c. infill development within existing urbanized areas ~~that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;~~
- d. redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases and former landfills,
- e. ~~if the~~ redevelopment that will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include ~~the following elements: (i)~~ an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties ~~for the life of the project through the mid-century; and (ii) measures that will achieve resilience and sustainability in all elements of the project;~~ (i) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; or;
- ef. ~~projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) and can be amortized within a period before removal or relocation of the proposed use is required; and or (3) will not require shoreline protection during the life of the project.~~
- g. public parks, natural resource restoration or environmental enhancement projects;

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CITY OF OAKLAND



DALZIEL BUILDING • 250 FRANK H. OGAWA PLAZA, SUITE 3315 • OAKLAND, CALIFORNIA 94612

Community and Economic Development Agency
Office of the Executive Director

(510) 238-3941
FAX (510) 238-2226
TDD (510) 238-3254

VIA EMAIL AND U.S. MAIL

November 24, 2010

San Francisco Bay Conservation and Development Commissioners
c/o Will Travis, Executive Director
Joseph La Clair, Chief Planner
50 California Street, Suite 2600
San Francisco, CA 94111

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SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

RE: Proposed Amendments to the BCDC Bay Plan Findings and Policies

Dear Commissioners,

The City of Oakland appreciates the Commission's postponement of a final decision on the proposed amendments to the BCDC's Bay Plan and extension of the public process until next year on such a complex and important issue. The substantive climate change implications for the region combined with multiple jurisdictional and process issues and economic development consequences involved in consideration of the Bay Plan proposals deserve the region's confidence that it was handled in a thoughtful manner.

The City of Oakland has reviewed the November 12, 2010 staff report which outlines various options to amend the Bay Plan for the Commission's consideration. We recommend that the Commission should consider updating the current sea level rise findings and policies dealing with climate change in an appendix to the Bay Plan, and clearly specify that once adopted, the new provisions will be used exclusively to guide the Commission in making regulatory decisions within its permit Area of Jurisdiction. In addition, and consistent with the parameters of the Commission's legal jurisdiction, the updated policies and findings in the appendix are intended to be and will be only advisory for local governments in areas outside BCDC's Area of Jurisdiction. Furthermore, the appendix should call for the preparation of a long-term regional sea level rise adaptation strategy. This approach would be a combination of options 4 and 5.

Our conclusion that the Bay Plan's findings and policies related to climate change should be updated within a stand alone appendix was based on the following:

- The Bay Plan was developed in 1965 and although it has been amended subsequently, the proposed amendments to address climate change highlight the need for a thoroughly updated Bay Plan which will not be undertaken in the near term.

- The Bay Plan was developed out of the need to protect a shrinking bay due to development expansion. The proposed amendments to the Bay Plan address the opposite goal which is to protect a rising Bay and address development along the Bay as it relates to climate change.
- The original structure of the Bay Plan is confusing to local governments, because definitions are imbedded in the document as findings and policies are used as findings instead of guidance statements. This is the exact opposite language that most local governments use in decision making process.
- The role of the document as a regulatory and/or advisory tool and jurisdictional issues can be more easily clarified outside the format of the existing Bay Plan.
- The appendix could provide the starting point or an initial outline for formulating a regional Bay Plan adaption strategy.

However, should the Commission choose not to consider our proposal, and instead choose to amend the existing Bay Plan, the City of Oakland offers specific language in the spirit of contributing to a more thorough public process. Our comments are intended to clarify that within the existing Area of Jurisdiction, the Commission has permitting authority, based on the findings and policies including those related to climate change. However, outside the Area of Jurisdiction, the climate change findings and policies are advisory only, and must not be construed to abrogate local governments' land use jurisdiction and permitting authority.

In providing comments, the City has not attempted to reconcile all the specific language that BCDC has received over the course of public comment, nor to detail or address every concern the City has with the proposed language. Rather, we believe that a re-examination of the overall approach, as described above is far preferable. However, our comments do attempt to address some of our concerns with the specific language proposed, as well as including language submitted by the San Francisco Planning and Urban Research Association (SPUR), dated November 10, 2010 and the Bay Planning Coalition (BPC) e-mailed on November 9, 2010.

We thank the Commission for the opportunity to comment and we trust our comments will be given due consideration.

Sincerely,



Walter S. Cohen
Director
Community and Economic Development Agency
City of Oakland

Attachment – Specific City Comments on the Proposed Amendments to the Bay Plan
Attachment – City of Oakland letter to BCDC, dated October 7, 2010

Attachment 11/24/10

City of Oakland Comments (shown in ~~strikeout~~/underline text) on the Proposed Amendments to the Bay Plan

BCDC Proposed Amendments	City of Oakland Proposed Revisions	Explanation of City Revisions
<p><u>Climate Change</u> Add underlined language as follows:</p>		
<p>c. <u>Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emissions scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of century. Although these are currently the best science-based sea level rise projections for California, recent observations of global greenhouse gas emissions show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. Therefore, to minimize flood risk, it is prudent to rely on higher projections in the range of possible future sea level rise.</u></p>	<p>c. Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emissions scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of century. Although these are currently the best science-based sea level rise projections for California, recent observations of global greenhouse gas emissions show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. Therefore, to minimize flood risk, it is prudent to rely on higher projections in the range of possible future sea level rise.</p>	<p>Staff did not change this comment. Unlike SPUR or the BPC letter, we agree that the higher projections, being more conservative, are appropriate.</p>
<p><u>d. 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.</u></p>	<p>The shoreline area currently designated as the 100-year floodplain by the Federal Emergency Management Agency will be vulnerable to</p>	<p>Staff agrees with most of the comments by the BPC.</p>

<p><u>Much of the developed shoreline 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>yearly flooding by midcentury. <u>Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive structural shoreline protection.</u> Much of the developed shoreline 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. <u>However, some of the best visual and physical access to the Bay, particularly in the South Bay, is provided from levees</u></p>	
<p><u>e. Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using higher emissions scenarios, which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude development that cannot be adapted to sea level rise.</u></p>	<p>e. Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with <u>local governments and other agencies, such as the National Oceanic and Atmospheric Agency, the Federal Emergency Management Agency and the United States Army Corps of Engineers,</u> is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using higher emissions scenarios, which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude <u>new</u> development that cannot be adapted to sea level rise.</p>	<p>Staff agrees with the comments by SPUR except that we believe that higher projections should be used not a range.</p>
<p><u>f. Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and</u></p>	<p>f. Natural systems and human communities are considered to be resilient when they can <u>prepare for,</u> absorb and rebound from the impacts of weather extremes or climate</p>	<p>This comment clarifies that climate change risk assessments result from need for</p>

<p><u>continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.</u></p>	<p>change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify <u>areas with adaptive capacity and resilience</u> and prioritize <u>issues-areas</u> that can be addressed by adaptation strategies.</p>	<p>adaptive capacity and resilience.</p>
<p><u>g. In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions can include relocating structures out of flood and inundation zones, protecting shorelines, and 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. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems.</u></p>	<p>g. In the context of climate change, mitigation <u>strategies</u> refers to actions taken to reduce greenhouse gas emissions, and adaptation <u>strategies</u> refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation <u>strategies actions</u> can include, <u>but are not limited to, clustering or otherwise locating development to reduce the area that needs to be protected,</u> relocating structures out of flood and inundation zones, protecting shorelines, and 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. Adaptation and mitigation <u>strategies measures that increase adaptive capacity and resilience and</u> are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems.</p>	<p>This comment clarifies the finding by using one term (strategies) instead of multiple terms such as approaches, actions, measures, etc. We also added clustering of development as an adaption strategy and moved this from finding "r" as it seems better suited here.</p>
<p><u>h. In the context of sea level rise adaptation, innovative approaches will likely include financing mechanisms, design concepts and land management practices. Effective,</u></p>	<p>h. In the context of sea level rise <u>adaptation</u>, innovative adaptation <u>strategies approaches</u> will likely include financing mechanisms, design concepts and</p>	<p>This comment clarifies the finding by using one term (strategies) instead of multiple</p>

<p><u>innovative adaptation approaches minimize public safety risks; maximize compatibility with and integration of natural processes; are resilient over a range of sea level, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale.</u></p>	<p>land management practices. Effective, innovative adaptation <u>strategies</u> approaches minimize public safety risks; maximize compatibility with and integration of natural processes; are resilient over a range of sea level, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation <u>strategies</u> approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale.</p>	<p>terms.</p>
<p>k. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, are potentially 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A lack of funding to address projected impacts from sea level rise will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</p>	<p>k. Shoreline development and infrastructure, critical to public and <u>environmental</u> health and the region's economic prosperity, are <u>potentially</u> 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 and <u>other facilities</u>, such as airports, ports, regional transportation facilities, <u>engineering and institutional controls at hazardous waste sites</u>, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A lack of funding to address projected impacts from sea level rise will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</p>	<p>Staff agrees with the comments by SPUR.</p>
<p><u>n. Some Bay Area residents, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities.</u></p>	<p>n. Some Bay Area residents, particularly those with low incomes or disabilities and the elderly, may lack the resources or <u>adaptive</u> capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities.</p>	<p>This comment uses similar terminology as in the above findings.</p>
<p><u>o. Approaches for ensuring public safety in developed vulnerable shoreline areas include: (1) protecting existing development; (2) accommodating flooding by building</u></p>	<p>o. Approaches for ensuring public safety in developed vulnerable shoreline areas include: (1) protecting existing development; (2) accommodating flooding</p>	<p>This comment eliminates this finding as it seems to be the same language as</p>

<p><u>structures that are resilient (3) discouraging permanent new development; (4) allowing only interim new uses that can be removed or phased out as inundation threats increase; and (5) removing existing development.</u></p>	<p><u>by building structures that are resilient (3) discouraging permanent new development; (4) allowing only interim new uses that can be removed or phased out as inundation threats increase; and (5) removing existing development.</u></p>	<p>finding "g."</p>
<p><u>p. Infill development is the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit. Infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities that can be served by transit. Some vulnerable shoreline areas are already improved with development that has regionally significant economic, cultural or social value, and can accommodate infill development.</u></p>	<p><u>p. Infill development is building homes, businesses, institutions and/or public uses, facilities and infrastructure on vacant, underutilized and/or environmentally degraded lands within existing, surrounded by, or adjacent to urbanized areas, and other supporting infrastructure. Infill development includes the conversion of former military bases, and property adjacent to former military bases, to job-producing or other productive uses, and the adaptive reuse of existing structures. Infill development is the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place, and that is surrounded by existing development that either is or will be served by transit. Infill development, such as employment opportunities and housing has been identified as an important strategy for reducing regional greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities that can be served by transit. Some vulnerable shoreline areas are already improved with development that has regionally significant economic, cultural or social value that will likely be protected from climate change in the future. These areas could also and can accommodate additional infill development.</u></p>	<p>Staff agrees with the comments by SPUR which further define what infill development is. However, infill development does not necessarily need to be located near transit. Furthermore, local jurisdictions can not guarantee transit service and we do not believe that any transit agency has commented on the proposed plan. This comment also clarifies that because development currently exists on or adjacent to the site, it would likely be protected from climate change in the future.</p>
	<p><u>Infill development has been identified in state law as an important strategy for reducing vehicle miles traveled and greenhouse gas emissions. To further these policy objectives, the Association of Bay Area Governments and the Metropolitan Transportation Commission initiated the FOCUS program to develop a regional development strategy that promotes a more compact Bay Area land</u></p>	<p>Staff agrees with this new finding by SPUR that is included to emphasize that infill development is an important mitigation strategy to reduce greenhouse gas emissions.</p>

	<p>use pattern. In consultation with local governments and the Commission, the FOCUS program identified Priority Development Areas for infill development in the Bay Area.</p>	
<p>g. <u>When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.</u></p>	<p>q. When planning or regulating development within <u>the Area of Jurisdiction</u> areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable should be subject to a simpler and more streamlined approach review and approval process if they do not significantly increase overall risks to public safety.</p>	<p>Staff agrees with the comments by SPUR. Furthermore, this comment clarifies that this finding only applies to regulating development within BCDC's jurisdiction and per the McAteer-Petris Act.</p>
<p>r. <u>In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict, infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; measures can be incorporated that will achieve resilience and sustainability in all elements of the project; and a permanent financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future.</u></p>	<p>r. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, <u>and</u> redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict and <u>increase adaptive capacity</u>, infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; <u>shall formulate, within the Area of Jurisdiction</u>, an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals; and an adaptive management plan for addressing key <u>climate change</u> uncertainties for the life of the project; <u>and incorporating</u> measures can be incorporated that will achieve enhance <u>project</u> resilience and sustainability in <u>all</u> elements of the project <u>related to climate change</u>; and a permanent financial strategy can be developed to guarantee that the general public will not be burdened with the cost of <u>maintaining or</u> protecting the project from any sea level rise or storm damage in the future. <u>For areas outside the jurisdictional boundary these requirements are advisory only.</u></p>	<p>Staff disagrees that jobs and housing must be located near transit. As we stated above, local governments cannot guarantee that that transit service will be provided. Furthermore, this comment clarifies that this finding and the need for an adaptation strategy and financial strategy only applies to regulating development within BCDC's jurisdiction and per the McAteer-Petris Act.</p>

<p><u>u. Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective region wide policy and to provide local governments with assistance and incentives for addressing climate change.</u></p>	<p><u>u. Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective region wide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission is working with other regional agencies to (1) harmonize Bay Plan Climate Change Policies with the Association of Bay Area Governments (ABAG) Priority Development Areas and update Bay Plan policies if necessary to ensure that appropriate infill development projects are encouraged, and (2) support the Metropolitan Transportation Commission (MTC) and other state, regional and local agencies in the creation of sustainable community strategies required by SB 375.</u></p>	<p>Staff agrees with SPUR's comments.</p>
<p><u>v. 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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation.</u></p>	<p><u>v. The Commission's current legal authority and regulatory Area of 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. Consistent with McAteer Petris Act Section 66610, the Commission's Bay Plan policies only have force of law in the Commission's jurisdiction. Bay Plan policies do not expand the Commission's jurisdiction. However, through its Bay Plan policies the Commission can provide guidance to developers, the general public, local governments, and other governmental agencies that have broader authority over the use and development of areas that outside the Area of Jurisdiction that are vulnerable to inundation. Local building officials have the primary responsibility for</u></p>	<p>This comment clarifies that the Commission's policies only apply to the Area of Jurisdiction per the McAteer-Petris Act and that for areas outside this jurisdiction the policies are to be used for guidance purposes.</p>

	<u>determining the safety of flood mitigation strategies as applied to structures constructed in an inundation or flood risk zone. Local floodplain management administrators are responsible for analyzing future floodplain risks associated with sea level rise and addressing these risks in local floodplain management ordinances.</u>	
	<u>Existing guidelines under the California Environmental Quality Act provide for analysis of whether a project in an inundation zone will expose people or structures to a significant risk of loss, injury or death involving flooding.</u>	Staff agrees with SPUR's comments.
	<u>Projects or activities that may be undertaken in the future within the scope of an existing permit for a phased development are governed exclusively by the terms of the existing permit, and are not subject to any Bay Plan policies adopted subsequent to the approval of the permit.</u>	Staff agrees with SPUR's comments and which echoes the concerns we raised in our October 7 th letter.
<u>1. When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best science-based projections currently available, should be used in the risk assessment.</u>	<u>1. When planning shoreline areas or designing larger shoreline projects within the Area of Jurisdiction, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best science-based projections currently available, should be used in the risk assessment.</u>	This comment clarifies that the Commission's policies only apply to the Area of Jurisdiction per the McAteer-Petris Act. Staff disagrees with SPUR on this comment and the idea that jurisdictions as opposed to project developers will undertake the risk assessment.
<u>2. To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects—other than minor repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place—should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project. If it is likely the project will remain in</u>	<u>2. To protect public safety and ecosystem services within the areas Area of Jurisdiction and vulnerable to future shoreline flooding, all projects—other than minor repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place—should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment</u>	This comment eliminated the statement regarding infill projects likely to be protected and added this to the definition of infill development. Staff agrees with SPUR's comments.

<p><u>place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	<p>conducted for the project <u>by a qualified engineer</u>. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</p>	
<p><u>3. Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change.</u></p>	<p>3. Undeveloped, vulnerable shoreline areas <u>not suitable for infill development, redevelopment or remediation potential</u> and that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change, <u>unless inland migration would be inconsistent with applicable priority use designations, or with an approved environmental remediation remedy prepared in compliance with applicable federal or state laws.</u></p>	<p>This comment clarifies that this policy addresses areas with current or potential habitat but not areas that are undeveloped and available for infill development, redevelopment, or could be remediated. Staff agrees with SPUR's comments.</p>
<p><u>4. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	<p>4. Wherever feasible and appropriate, effective, <u>sea level rise-innovative adaptation approaches strategies</u> should be encouraged <u>to address sea level rise.</u></p>	<p>This comment clarified this policy with similar language to the findings.</p>
<p><u>5. 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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity. The strategy should incorporate an adaptive management approach, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared and regularly updated in consultation with government agencies with authority over flood protection. The regional</u></p>	<p>5. The Commission <u>shall</u>, in collaboration with the Joint Policy Committee, other regional, state and federal agencies, local governments, and the general public, should formulate a regional sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity. The strategy should incorporate an adaptive management approach, <u>be consistent with sustainable communities strategies required by SB 375</u>, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared <u>under the</u></p>	<p>Staff agrees with SPUR's and the BPC comments and further clarifies this policy.</p>

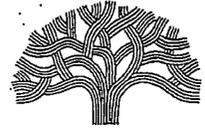
<p><u>strategy should determine where existing development should be protected and infill development encouraged, where new development should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>	<p><u>direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection. Particular attention should be given to identifying and encouraging the development of long-term regional flood protection strategies that may be beyond the fiscal resources of individual local governments. The regional strategy, with input from all applicable regional, state and federal agencies, local governments, and the general public, should determine where existing infill development should be protected and infill development encouraged, where new development should be permitted and encouraged, where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>	
<p>The goals of the (regional adaption) strategy (Policy 5) should be to: <u>d. encourage innovative approaches to sea level rise adaptation;</u> <u>f. integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;</u> <u>g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u> <u>h. address any existing contamination and the implications of the contamination on water quality;</u> <u>i. support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u> <u>j. identify actions to prepare and implement the strategy, including any needed changes in law; and</u> <u>k. identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.</u></p>	<p>The goals of the (regional adaptation) strategy (Policy 5) should be to: <u>d. encourage innovative approaches to sea level rise adaptation strategies to address sea level rise;</u> <u>a. advance regional public safety and economic prosperity by protecting most existing and planned shoreline development, especially 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, major parks, recreational areas and trails;</u> <u>f. integrate regional mitigation measures strategies designed to reduce greenhouse gas emissions with regional adaptation measures strategies designed to address the unavoidable impacts of climate change;</u> <u>g. advance regional sustainability, encourage infill development (such as housing) and job creation, and provide diverse housing served by transit;</u> <u>h. address any existing contamination and the implications of the contamination on water quality; encourage the remediation</u></p>	<p>Staff agrees with SPUR's additions and some additions by the BPC. This comment also clarifies the goals of the regional adaption strategy.</p>

	<p>and sustainable development of areas with <u>existing environmental degradation and contamination in order to improve water quality;</u> j. identify actions to prepare and implement the strategy, including any needed changes in law; and k. identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning in areas <u>outside the Area of Jurisdiction</u> into local community design processes.</p>	
<p><u>6. Until a regional sea level rise adaptation strategy can be completed, when planning or regulating new development in areas vulnerable to future shoreline flooding, new projects should be limited to:</u> a. <u>minor repairs of existing facilities or small projects that do not increase risks to public safety;</u> b. <u>transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p>	<p>6. Until a regional sea level rise adaptation strategy can be completed <u>and local adaptive management standards are developed, the Commission in its Area of Jurisdiction, should evaluate, when</u> planning or regulating new development in areas vulnerable to future shoreline flooding on a <u>case-by-case basis, Projects should be limited to that should proceed</u> are: a. minor repairs of existing facilities or small projects that do <u>will</u> not increase risks to public safety; b. transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</p>	<p>This comment clarifies that regulating new development and limiting development is only permitted with the Area of Jurisdiction defined in the plan.</p>
<p><u>c. infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u> <u>d. redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the redevelopment will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing</u></p>	<p>c. <u>infill development, within existing urbanized areas, immediately adjacent to or surrounded by existing development and as defined in findings (p) and (q) that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u> <u>c. development within planned and potential ABAG Priority Development Areas; and</u> d. <u>other development or</u> redevelopment, particularly if it that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the <u>development or</u> redevelopment will (1) provide significant regional benefits and meet <u>advance</u></p>	<p>This comment clarifies that infill development includes areas surrounding by existing development and as such will likely already be protected from the effects of climate change. This comment also eliminates the phrase about housing or employment near transit as local government can't guarantee this access and rather redefines the policy in terms of</p>

<p><u>key uncertainties for the life of the project; (ii) measures that will achieve resilience and sustainability in all elements of the project; (iii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; or;</u></p>	<p>regional <u>smart growth and greenhouse gas reduction goals by concentrating employment or housing near adequate transit service sufficient to serve the project;</u> (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key <u>climate change</u> uncertainties for the life of the project; (ii) measures that will <u>achieve enhance</u> resilience and sustainability in all elements of the project <u>related to climate change;</u> (iii) a <u>permanent financial strategy that will address the potential cost of protecting and maintaining the project from sea level rise and storm damage for the life of the project. guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; or;</u> e. projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require <u>additional shoreline protection during the life of the project beyond those flood mitigation strategies that are proposed as part of the project.</u></p>	<p>the overall regional smart growth and greenhouse gas reduction goals. Staff agrees with most, but not all of SPUR's comments.</p>
<p><u>7. To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.</u></p>	<p>7. To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should <u>shall, to the maximum extent feasible,</u> be coordinated to resolve conflicting guidelines, standards or conditions.</p>	
	<p><u>8. In any area potentially subject to future inundation but outside of the Commission's jurisdiction, a project that is or may be inconsistent with any Bay Plan climate change policy should not be deemed by any lead or responsible agency as</u></p>	<p>Staff agrees with this comment.</p>

	<p><u>inconsistent with the Bay Plan for purposes of environmental review under CEQA; nor will the Commission subject that project to consistency review under the federal Coastal Zone Management Act except in those rare cases where the project will clearly affect areas within the Commission's jurisdiction.</u></p>	
<p><u>Public Access</u></p>		
<p>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. 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.</p>	<p>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. Any public access provided as a condition of development should be required <u>and designed</u> to remain viable in the event of future sea level rise or flooding.</p>	<p>Staff agrees with this comment.</p>

CITY OF OAKLAND



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Community and Economic Development Agency
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October 7, 2010

San Francisco Bay Conservation and Development Commissioners
Will Travis, Executive Director
Joseph La Clair, Chief Planner
50 California Street, Suite 2600
San Francisco, CA 94111

RE: Proposed Amendments to the BCDC Bay Plan Findings and Policies

Dear Commissioners,

The City of Oakland understands the need for a comprehensive policy and action plan to address future sea level rise as a result of climate change and commends BCDC for considering amendments to the Bay Plan to address these very real projected impacts. We are just starting to understand the possible implications of this enormous and complex issue, and how it will affect the economics, safety, and enjoyment of the shoreline around San Francisco Bay, particularly in Oakland. Although this effort apparently began in earnest some time ago, Oakland City staff only recently became aware of the proposed changes to the Bay Plan. Therefore, we request that the October 7, 2010 public hearing be postponed or continued until we can further evaluate the proposed changes on existing, approved, and potential future development in Oakland.

The City is particularly concerned that some of the definitions and proposed policies appear vague and could establish onerous requirements that may thwart critical redevelopment along Oakland's shoreline. The City's preliminary comments and concerns are outlined below. As responsible jurisdictions, we must begin to coordinate with each other to develop strategies based on sound scientific data and sustainable principles, while recognizing the need to encourage economic development in areas, such as Oakland, that will accommodate infill development and foster reductions in vehicle miles travelled and greenhouse gas emissions. The City of Oakland also has a responsibility to our City and the region to grow, on an infill basis, our economy, specifically renewal of the Oakland Army Base. The rules to enable us to accomplish that mission must be simultaneously clear and flexible so that the private sector can rely on the City's ability to review and approve appropriate development.

As noted in the September 3, 2010 staff report, climate change will affect all of the Bay Area. Per BCDC's published maps, a significant number of properties within the City of Oakland's jurisdiction as well as important infrastructure are projected to be vulnerable to rising sea levels.

1. We would like BCDC to clarify and expressly confirm that it is not proposing an expansion of its existing jurisdiction as defined in the "Area of Jurisdiction" to include the mid-level, 100 year future shoreline projections or any other areas not currently within the Area of Jurisdiction definition. We would like BCDC also to clarify and expressly confirm that its area of jurisdiction will not be a "moving target" as sea levels rise, and that any changes contemplated to the "Area of Jurisdiction" will occur with adequate advanced notice and opportunity to comment, particularly will allow for direct, substantive input from the affected jurisdictions. Furthermore, we would like the Bay Plan to be amended to specifically reference a dated map with the existing shoreline and BCDC's 100' landward jurisdiction clearly delineated.
2. Climate Change Finding "p" defines "infill development" as it is referenced throughout the Plan. The City of Oakland commends BCDC for recognizing that infill development is an important strategy to reduce greenhouse gas emissions and development on greenfield areas by locating housing and businesses near existing infrastructure. However, the City of Oakland believes that this definition is too vague and needs further clarification. As an infill city, we are especially concerned with this definition and its potential implications in directing development to certain areas. Among other things, we are concerned that vague definitions or undercertain, overexpansive regulations could discourage investment necessary to encourage development in true infill areas. Furthermore, as the City of Oakland's General Plan encourages development, as well as public access and conservation along the shoreline, clear language defining what is "infill development," and what is not is an absolute necessity. For example, is infill development defined in a similar manner as in the state CEQA guidelines? Does it refer to development projects that are only surrounded by existing development? Does it include expanding development that currently exists? The City of Oakland would recommend amending the Bay Plan with a Definitions section.
3. Climate Change Finding "r" outlines possible methods to minimize development from the risk of flooding in low-lying areas. The City of Oakland recognizes that there is not a "one size fits all" approach to addressing this issue. The City of Oakland is concerned that the amendments to the Plan imply that only the options explicitly stated are effective in addressing the risk. We would like the Plan to acknowledge other possible options and add the language "including but not limited to" to this section.
4. Climate Change Findings "t" and "u" and Policy "5" acknowledge the need to work collaboratively with local state, local, and federal jurisdictions to address climate change and rising sea levels. The City of Oakland would like the Bay Plan to be amended so it is clearly stated that BCDC must work with local jurisdictions in this regard, and that the effects of adaption and protection that one jurisdiction implements could have detrimental effects for neighboring jurisdictions.
5. Climate Change Finding "v" discusses BCDC's existing regulatory authority. The City of Oakland would like BCDC to clearly confirm that the proposed findings and policies do not extend to development outside of BCDC's "Area of Jurisdiction." Furthermore, we would like this section to be amended to clearly state that the findings and policies in areas outside the "Area of Jurisdiction" are only advisory.

6. We are concerned that Climate Change Policies "2 and 6" require certain developments to be designed to be resilient to sea level rise, and for developments of longer duration to also develop an adaptive management plan, without providing clear guidelines for what such a plan will require. This section also states that "infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place" would not have to be designed in such manner. Again, the City of Oakland believes that infill development needs to be more clearly defined. Furthermore, the Plan should also be amended to clarify what is meant by the statement "will likely be protected" as this has serious implications and may be subject to unlimited interpretation.
7. We are particularly concerned that Climate Change Policy "6" proposes a virtual moratorium on development in areas "vulnerable to future shoreline flooding," regardless of the risk of flooding or the possibility of innovative adaptive measures that would mitigate projected sea level rise. Although Policy "6" proposes some exceptions to this restriction, the exceptions are ill-defined. For example, the Policy purports to exclude certain types of infill development if that development will be protected in the future. However as noted above, the definition of areas likely to be protected is unclear. As another example "redevelopment projects" are exempt; however, redevelopment generally assumes that development has already occurred. Therefore, why would the sea level rise analysis requirements differ between redevelopment projects and infill development? We are also concerned that the requirements for redevelopment projects including the risk assessment, adaptive management plan, and a permanent financial strategy to protect the public from sea level rise are too vague. The Plan should include very specific language for what is expected from such analysis and strategies. In sum, without clear definition and requirements, we are very concerned that this Policy could severely impair the City's ability to redevelop its shoreline areas with viable, productive uses.
8. It is the City of Oakland's understanding, based on discussions with BCDC staff, that there is no consideration given to projects that have already been approved by the local government and certified under CEQA, but have not received approval or permits from BCDC. Specifically, the City of Oakland is concerned that these projects would have to be significantly revised and re-evaluated under CEQA in order to obtain BCDC permits should the Plan be amended. The City of Oakland is especially concerned as one of these projects is a voter approved and funded infrastructure project. Given the current economic climate and the cost to revise a project and undergo additional environmental review, the City of Oakland believes that the Bay Plan should include language to clearly exempt these projects from the proposed findings and policies.

Again, the City of Oakland kindly requests that the October 7, 2010 public hearing be postponed or continued until we can further evaluate the proposed changes on existing, approved, and future development in Oakland. If given additional time, City staff would provide specific language that we believe would address our concerns regarding the proposed changes. We look forward to working with you to develop a comprehensive plan that begins to address this important challenge and we thank the Commission for the opportunity to comment.

Sincerely,



Walter S. Cohen, Director
Community and Economic Development Agency

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& DEVELOPMENT COMMISSION

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December 1, 2010

Mr. Will Travis
San Francisco Bay Conservation and Development Commission (BCDC)
50 California Street, Suite 2600
San Francisco CA 94111

Re: Proposed Bay Plan Amendment No. 1-08 - Findings and Policies on Climate Change

Dear Mr. Travis:

The Nature Conservancy commends the BCDC and its staff for the ground-breaking recommendations in the Proposed Bay Plan Amendment No. 1-08 to address adaptation to sea level rise San Francisco Bay, and strongly urges BCDC Board to adopt the proposed Bay Plan Amendment, and integrate its findings and policies on climate change into the San Francisco Bay Plan. Government agencies and the public at large increasingly recognize the need to manage the impacts of climate change on our communities and natural resources, but examples of real actions to promote this management have been scarce. We are appreciative of the leadership BCDC has taken to recognize and address the future impact of climate change on San Francisco Bay by promoting the necessary regional science, planning, regulatory action, and community awareness for climate change adaptation.

The Bay Plan Amendment Should Prioritize Ecosystem-Based Adaptation.

Climate Adaptation – the adjustments of natural or human systems in response to climate change¹ – is becoming an increasingly important part of the work of development management agencies. One of the main challenges in current adaptation work is to understand and demonstrate how adaptation works and what the implications of adaptation for communities and natural resource resilience are.² Recent studies have shown a negative impact of many adaptation strategies on biodiversity, especially in the case of ‘hard defenses built to prevent coastal and inland flooding.’³ This could result in so-called “mal-adaptation” in the long term if the processes that build and sustain ecosystems are disturbed.

¹ IPCC [Intergovernmental Panel on Climate Change]. 2007. Summary for Policy Makers. In: M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds.). *Climate Change 2007: Impacts, Assessment and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK.

² Tschakert, P. and K. Dietrich. 2010. Anticipatory learning for climate change adaptation and resilience. *Ecology and Society* 15(2): 11.

³ Campbell, A., V. Kapos, J.P.W. Scharlemann, P. Bub, A. Chenery, L. Coad, B. Dickson, N. Doswald, M.S.I. Khan, F. Kershaw and M. Rashid. 2009. *Review of the Literature on the Links between Biodiversity and Climate Change: Impacts, Adaptation and Mitigation*. Technical Series No. 42, Secretariat of the Convention on Biological Diversity (CBD). Montreal, Canada. 124 pp.

On the other hand, adaptation strategies that incorporate natural resource values and management can result in positive feedbacks for both people and biodiversity.⁴ Ecosystem-based adaptation is an approach that simultaneously builds resilience and reduces the vulnerability of both human and natural communities to climate change. Ecosystem-based adaptation approaches are based on the well-founded premise that both natural and managed ecosystems can reduce vulnerability to climate-related hazards and gradual climatic changes. The sustainable management of ecosystems can provide social, economic and environmental benefits, both directly through a more sustainable management of biological resources and indirectly through the protection of ecosystem services.⁵ The main objectives of ecosystem-based adaptation are to promote community resilience through ensuring the maintenance of ecosystem services, support adaptation of different sectors, reduce disaster risks, among others (Coll et al., 2009), and prevent “mal-adaptation” which may be the result of a lack of information and high levels of uncertainty. The Nature Conservancy espouses the use of ecosystem-based adaptation as a component of a comprehensive suite of actions to help communities manage the impacts of a changing climate.

One of the most promising and well-founded ecosystem-based adaptation approaches – particularly for San Francisco Bay – is the protection and restoration of tidal marshes as a first line of defense against sea level rise. Actions to protect SF Bay’s extensive tidal marshes provide benefits for nature and human communities alike, by protecting coastal development and associated human communities from storms, enhancing water quality, slowing erosion, and other benefits. The Nature Conservancy is pleased that the draft BPA clearly recognizes these important benefits and proposes both tidal marsh protection in SF Bay, and policy to allow for the advancement of marshes into upland areas to keep pace with sea level rise. In addition, The Nature Conservancy offers several recommendations for strengthening the amendment in this regard.

These following recommendations contained in the California Climate Adaptation Strategy are particularly relevant:

- Where the shoreline is vulnerable to sea level rise, particularly in “undeveloped, areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones,” prohibiting development is recommended, and the state “should likewise encourage projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats... [and] activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands.” (p. 74)

⁴ CBD [Convention on Biological Diversity]. 2009. *Connecting Biodiversity and Climate Change Mitigation and Adaptation: Report of the Second Ad Hoc Technical Expert Group on Biodiversity and Climate Change*. Technical Series No. 41. Secretariat of the Convention on Biological Diversity (CBD). Montreal, Canada. 126 pp.

⁵ World Bank. 2010. *Convenient Solutions to an Inconvenient Truth: Ecosystem Based Approaches to Climate Change*. World Bank. Washington DC, USA.

- Even in areas vulnerable to sea level rise that are already developed, agencies “should generally not plan, develop, or build any new significant structure” where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during its expected life.” (p. 73)
- “The state should identify priority conservation areas and recommend lands that should be considered for acquisition and preservation. The state should consider prohibiting projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones. The strategy should likewise encourage projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats. The state should pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands. For these priority conservation areas, impacts from nearby development should be minimized, such as secondary impacts from impaired water quality or hard protection devices.” (p. 74)

The Bay Plan Amendment (BPA) should make specific reference to these important recommendations from the California Adaptation Strategy, which was developed collaboratively by numerous state agencies and adopted with substantial public input. As with the Bay Plan, the California Adaptation Strategy is a visionary document that reflects California’s continued leadership in action on climate change and should guide the work of individual agencies and local governments in making coordinated adaptation decisions.

The draft BPA generally discourages most development in areas vulnerable to inundation, while encouraging innovation in planning for sea level rise in some cases. Strengthening the policy direction towards natural adaptation benefits for climate change is particularly important with respect to tidal flats and marshes, salt ponds, and managed wetlands, as restoring wetlands and marshlands is the quickest, most efficient and cost effective shoreline defense against sea level rise.

With regards to proposed development, BCDC should require applicants to consider both natural ecosystem adaptation and engineered adaptation to sea level rise, including the entire range of possible future rates of sea level rise (low, medium, and high) and calculate risks; design, operations, and maintenance measures; economic costs and benefits; environmental impacts, including any new greenhouse gas emissions generated; and other social effects. While the proposed plan amendment addresses these elements, we recommend that it be revised to adopt a policy giving explicit priority to natural ecosystem adaptation whenever possible.

The Nature Conservancy Recommends Several Specific Revisions to the Proposed BPA.

Climate Change Findings

TNC recommends adding a finding that defines Ecosystem-Based Adaptation, and emphasizes its importance in a broader strategy for adapting San Francisco Bay communities to the impacts of a changing climate. Specifically, BCDC should find as follows:

Ecosystem-based adaptation is an approach that simultaneously builds resilience and reduces the vulnerability of both human and natural communities to climate change. Research has demonstrated that both natural and managed ecosystems can reduce the vulnerability of people to climate-related hazards and gradual climatic changes. The sustainable management of ecosystems can provide social, economic and environmental benefits that are difficult and costly to replace if they are lost. Ecosystem-based adaptation is not a stand-alone strategy, but should be part of a broader suite of strategies for mitigating climate impacts on communities.

Climate Change Policies

- We urge the BCDC to further emphasize the importance of undeveloped land for climate adaptation. As stated in the California Climate Adaptation Strategy, the state should avoid permitting development in undeveloped areas that are vulnerable to sea level rise, that contain important habitat, or that contain opportunities for tidal wetland restoration, habitat migration, or buffer zones. Accordingly we suggested modifying Item 3 to read:

Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change. Development in these areas should be discouraged.

This recommendation would make the BPA consistent with the recommendations in the California Climate Adaptation Strategy, and would effectively enhance protection of both people and habitat in the face of shoreline change.

- In addition, we recommend that BPA incorporate language explicitly prioritizing ecosystem-based adaptation approaches over engineered approaches wherever possible. As discussed above, these approaches benefit both human and natural communities, while engineered adaptation – especially shoreline hardening – can be expensive, creates a false sense of security that encourages additional development, and often impairs natural processes and degrades habitat. Accordingly we recommend revising policy item 4 to emphasize the importance, of ecosystem-based adaptation approaches over hard infrastructure approaches:

Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged. Whenever feasible and appropriate, ecosystem-based adaptation approaches should be prioritized.

- We strongly support the provisions of Item 5, regarding efforts to identify areas for protection and removal of development for potential inland migration areas.

Shoreline Protection Policies

As noted above, structural or engineered shoreline protection impairs natural processes that sustain habitats in the Bay ecosystem. Therefore, as the Staff Report (p.150) correctly concludes: "the feasibility of using wetland or other natural, soft shoreline protection alternatives should be determined before using hard, engineered shoreline protection devices." We recommend strengthening the language of Item 4 to emphasize the priority of natural infrastructure approaches over hard infrastructure, as follows:

Whenever feasible and appropriate, shoreline protection projects should employ ~~include provisions for~~ natural, or nonstructural methods such as tidal marshes ~~vegetation~~ and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management. 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 protection projects include provisions for the establishing marsh and transitional upland vegetation as part of the protective structure, wherever feasible.

The Nature Conservancy Strongly Supports the Development of a Regional Adaptation Strategy.

As noted above, the proposed BPA is a landmark effort of the "real life," on-the-ground application of the conceptual principles of climate change adaptation. While the BPA is presented in terms of general recommendations without reference to the characteristics of specific shoreline types, the Background Report, *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline* (April 7, 2009), provides a more comprehensive look at the impacts of climate change and elaborates on important approaches to adaptation that are referenced in the draft Bay Plan Amendment. In particular, the BCDC prepared a vulnerability analysis that included the most up-to-date GIS analysis of sea level rise impacts on vulnerable shoreline areas to identify the degree of sensitivity, adaptive capacity, vulnerability, and associated costs of the potential impacts. In addition, the upcoming NAS Report on CA sea level rise projections, will model the potential for migration of tidal wetlands in response to sea level rise and other impacts, will very likely improve BCDC's ability to develop a refined visualization of impacts and recommendations for land use and natural resource protection. Accordingly, we strongly support Climate Change Policy Recommendation 5, proposing a collaborative, inter-agency process to develop a regional strategy identifying specific adaptation approaches, and the areas for which they are appropriate.

Specifically, we support the development of a framework for adaptation strategy selection to optimize natural resource protection and community resilience based on certain variables – values to protect, existing threats to those values, and impact of likely future conditions. For example, development decisions should consider parameters such as the long-term viability of adjacent marshes, their value in population potential and other ecosystem services, and the presence of other development that may already be impeding the ability of adjacent marshes to migrate. All of these parameters should be reviewed through a spatial analysis, enabling BCDC and its regional partner agencies to make informed assessments of where – for example – structural protection may be necessary or where marsh migration should be facilitated. TNC has expertise in the development of multi-objective decision support tools for sea level rise planning and we would be pleased to discuss the potential utility of such tools for the development of the regional strategy.

Thank you for the significant work that you and your staff at BCDC have done to date to integrate climate change adaptation policies into the Bay Plan and for the opportunity to comment on the proposed amendment. We strongly support the proposed Bay Plan Amendment and offer our recommendations to enhance protection of public safety, private property and our important natural resources in and along San Francisco Bay. We also appreciate the efforts by BCDC to address our earlier comments. Please contact Louis Blumberg at 415-281-0439, if you have any questions or would like to discuss these comments as you proceed with your current revised draft.

Sincerely,



Louis Blumberg, Director
California Climate Change Team



Sally Liu
Conservation Scientist



Sarah Newkirk
Coastal Project Director



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OFFICE OF THE CITY MANAGER

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December 1, 2010

SAN FRANCISCO BAY CONSERVATION & DEVELOPMENT COMMISSION

Dr. Sean Randolph, Chairman
San Francisco Bay Conservation and Development Commission (BCDC)
50 California Street, Suite 2600
San Francisco, CA 94111

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Re: Proposed Bay Plan Climate Change Amendments

Dear Dr. Randolph:

The City of Vallejo supports BCDC's initiative in leading our region's response to climate change and sea level rise in the Bay Area. We are pleased that BCDC will seek continued input on this subject from local jurisdictions and not take formal action until 2011. We look forward to working with the City of Suisun, Solano EDC and other Solano County stakeholders to support the upcoming January 11, 2011 workshop on this subject in Solano County. We encourage BCDC staff to consider this input in crafting its recommendation to the BCDC Board in 2011.

Presently, our staff recommendation is that BCDC consider adopting climate change descriptive (not proscriptive) guidance in the form of a stand-alone document (e.g. Public Access Guidelines), with policies that would be advisory. We believe this approach will achieve the stated BCDC goal of adopting advisory policy guidance to local governments. The City of Vallejo will continue to engage on this issue and will provide additional written input after the Solano County workshop and in advance of BCDC's consideration of policies in 2011.

Thank you for your consideration. Feel free to contact Michelle Hightower, Acting Planning Manager (707-648-4506 or mhightower@ci.vallejo.ca.us), or me (707-648-4579, cwhittom@ci.vallejo.ca.us) if you have any questions regarding this matter.

Sincerely,

Craig Whittom
Assistant City Manager / Community Development

cc: Phil Batchelor, City Manager
Michelle Hightower, Acting Planning Manager
Steve England, Real Property Asset Manager

December 13, 2010

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

RE: Bay Plan Amendment 1-08 Concerning Climate Change

Dear Mr. Chairman and Commissioners:

Save The Bay has provided specific comments and suggestions for improving the proposed Bay Plan amendment throughout the last two years, and we repeat those comments here and in the attached form as the Commission has requested.

We have repeatedly encouraged the Commission to reject the scare tactics and spurious charges of those who have sought to delay adoption of these important policies to protect the Bay's people and wildlife for over a year.

We have defended the staff and the Commission from vicious attacks intended not to deal appropriately with climate change, but to damage and discredit the agency whose creation we championed five decade ago.

We again encourage you to act swiftly to accept our suggestions for strengthening and clarifying the most recent staff draft, and to adopt the amendment, which is urgent and overdue. The current draft amendment does not go beyond the scope of BCDC's mandate. It does not and cannot expand BCDC's jurisdiction¹.

Alternatives for Proceeding

Per the staff's December 10, 2010 memo, we strongly recommend:

¹ This is in spite of the recommendation of the National Oceanic and Atmospheric Administration's final California Coastal Management Program for 2005-2008, which highlighted as an "area for improvement" possible expansion of BCDC's jurisdictional boundary to accommodate sea level rise:

PROGRAM SUGGESTION: The Bay Conservation and Development Commission should explore a possible expansion of its jurisdictional boundaries in recognition of the increase in size of San Francisco Bay and the effects of climate change on the bay, and how that may affect BCDC's planning, regulatory, and public access functions and mandates. ["Final Evaluation Findings, California Coastal Management Program, March 2005 through December 2008", p. 50]



Policy #1 – Risk Assessments

The policy direction in the language should be retained – the State of California has provided guidance on scientifically-based sea level rise estimates for planning and risk assessment.

Policy #5 – Regional Strategy

The policy direction in the language should be retained – BCDC needs to articulate goals for the strategy to prompt a useful multi-agency discussion and process, and bring to bear the years of expertise it has developed on the subject.

Policy #6 – Development in Low-Lying Areas

The policy direction in the language should be retained to limit development as indicated, with clarification that Policy #6 applies only to urbanized areas already containing development, not undeveloped areas covered by Policy #3.

Language Changes

Our priority request for changes in the proposed amendment language remains the same. The Findings and Policies should more clearly and explicitly distinguish between undeveloped areas within BCDC's jurisdiction that are contain habitat or the potential for habitat restoration, and areas that already contain some development. This can be accomplished by modifying the proposed Findings and Policies to incorporate the recommendations regarding sea level rise in the California Climate Adaptation Strategy. The Adaptation Strategy, adopted in November 2009 pursuant to Governor Schwarzenegger's Executive Order S-13-08, is an ambitious blueprint that includes top priority recommended actions to combat the impacts of sea level rise by avoiding future hazards and promoting protection and restoration of critical habitat. It was developed with extensive stakeholder input and comment through interagency review.

The Adaptation Strategy recommends prohibiting development in “undeveloped, vulnerable shoreline areas containing critical habitat or opportunities for habitat creation,” and urges state agencies to incorporate this approach into their decisions.² The BCDC staff in September incorrectly stated that the Adaptation Strategy was “not developed with stakeholder input, and not an official state policy” [Staff Report of September 3, 2010, p. 43].

In fact, it is a matter of public record that the Strategy was developed in consideration of extensive comments from members of the public, non-governmental organizations, businesses, and agencies provided at two statewide public hearings and in more than 80 written comment letters. (attached, and

² 2009 California Climate Adaptation Strategy, December 2009, Section VI. Ocean and Coastal Resources Adaptation Strategies and Actions, pp.73-74.

posted on the California Resources Agency's web site at <http://www.climatechange.ca.gov/adaptation/>).

Because BCDC has crucial regulatory authority over San Francisco Bay, the Suisun Marsh, and their shorelines, you should adopt the recommended actions of the California Climate Adaptation Strategy into BCDC's San Francisco Bay Plan and Suisun Marsh Protection Plan, specifically:

- Prohibition or active discouragement of "projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones"
- Encouragement of "projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats. The state should pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands."

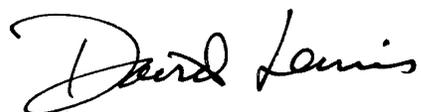
The pending Bay Plan Amendment No. 1-08 offers a timely opportunity to ensure that the Commission's regulatory and planning decisions are consistent with the Adaptation Strategy, and to provide needed guidance to developers, the general public, and other government agencies.

We strongly recommend that the Commission amend the current staff draft of Bay Plan Findings and Policies on Climate Change to state clearly that new development in undeveloped shoreline areas vulnerable to sea level rise should not be permitted, as an essential step to encourage habitat preservation and restoration, including acquisition where necessary to ensure protection.

The best way to accomplish this is included in the attached form.

Thank you again for your consideration of these suggestions.

Sincerely,



David Lewis
Executive Director

Attachments

REASONS TO ADOPT SAVE THE BAY'S RECOMMENDED CHANGES TO SEPTEMBER 3, 2010 STAFF DRAFT

- + Incorporate guidance from the Commissioners provided on November 2, 2009 and repeated at subsequent meetings
- + Conform to the California Climate Adaptation Strategy, whose coastal resources section emphasizes that the top priority near-term action of state policy should be to “Avoid Future Hazards and Protect Critical Habitat.” BCDC policies should directly reference the Strategy language on protecting infrastructure, habitat, and habitat restoration opportunities; and its instruction that agencies identify needed jurisdiction and authority changes
- + Clearly differentiate policies for developed areas from policies for undeveloped areas, and apply the precautionary, “no regrets” approach to planning and development; make the policies consistent with Finding (p), defining “infill development” as land already urbanized with infrastructure, and Finding (j) on sustainability.
- + Respond to the State of California’s most recent estuarine wetlands assessment. The State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP) project assessed the status of wetlands in California’s estuaries, and found that the conversion of estuaries to human land use has greatly decreased the extent of salt marshes and associated habitat. This most comprehensive evaluation ever conducted on the overall health of any class of wetlands in California found that San Francisco Bay contains 77 percent of all California salt marsh, and recommended:
 - Undertake protection of remaining habitat *and restoration to increase the size of estuarine wetlands* to reduce the effects of terrestrial predators and other stressors.The Commission staff’s report, *Living with a Rising Bay*, also underscored these imperative opportunities, and showed that the Bay needs these key actions starting immediately:
 - 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.

Tidal Marshes and Tidal Flats		
Existing Bay Plan Policies	Staff’s Proposed Policies	Alternative Language
	Policies 1 through 3 – no changes	
<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. 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.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>4. Where and whenever possible feasible, 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. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management 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 <u>habitat restoration and wetland migration.</u></p>	<p>4. Where <u>and whenever possible feasible</u>, 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 to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management efforts that result in a Bay ecosystem resilient to climate change and sea level rise. 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 for the purpose of habitat restoration and wetland migration.</p>

Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>k. <u>Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A lack of funding to address projected impacts from sea level rise will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</u></p>	<p>k. <u>Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. There may be inadequate 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>

Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>v. <u>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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation.</u></p>	

		<p>Add a new finding:</p> <p><u>The 2009 California Climate Adaptation Strategy (CAS), adopted pursuant to Executive Order S-13-08 establishes avoiding future hazards and protecting critical habitat as a top priority action to combat the impacts of sea level rise. The CAS says that “State agencies should consider project alternatives that avoid significant new development in areas that cannot be adequately protected (planning, permitting, development, and building) from flooding or erosion due to climate change. The most risk-averse approach for minimizing the adverse effects of sea level rise and storm activities is to carefully consider new development within areas vulnerable to inundation and erosion, and to consider prohibiting development of undeveloped, vulnerable shoreline areas containing critical habitat or opportunities for habitat creation. State agencies should generally not plan, develop, or build any new significant structure in a place where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure. However, vulnerable shoreline areas containing existing development or proposed for new development that has or will have regionally significant economic, cultural, or social value may have to be protected, and in-fill development in these areas should be closely scrutinized. State agencies should incorporate this policy into their decisions, and other levels of government are also encouraged to do so.”</u></p>
		<p>Add a new finding:</p> <p><u>The CAS recommends that “If agencies do plan, permit, develop or build any new structures in hazard zones, agencies should employ or encourage innovative engineering and design solutions so that the structures are resilient to potential flood or erosion events or can be easily relocated or removed to allow for progressive adaptation to sea level rise, flooding, and erosion.”</u></p>

Climate Change		
	Staff's Proposed Findings	Alternative Language
		<p>Add a new finding: <u>To promote habitat protection in the face of sea level rise, the CAS says “The state should identify priority conservation areas and recommend lands that should be considered for acquisition and preservation. The state should consider prohibiting projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones. The strategy should likewise encourage projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats. The state should pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands. For these priority conservation areas, impacts from nearby development should be minimized, such as secondary impacts from impaired water quality or hard protection devices.”</u></p>
		<p>Add a new finding: <u>The CAS recommends that by September 2010 BCDC and “state agencies responsible for the management and regulation of resources and infrastructure subject to potential sea-level rise should prepare agency-specific adaptation plans, guidance, and criteria, as appropriate. Agencies with overlapping jurisdictions in the coastal zone will coordinate when drafting these plans to reduce or eliminate conflicting approaches.” The CAS says that BCDC “should: a. Consider requiring applicants to address how sea-level rise will affect their project, include design features that will ensure that the project objectives are feasible and that the project will not be rendered unusable or inoperable over its lifespan, that critical habitat is protected, and that public access is provided, where appropriate.”</u></p>

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p><u>1. When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best science-based projections currently available, should be used in the risk assessment.</u></p>	
	<p>Add underlined language as follows:</p> <p><u>2. To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects--other than minor repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place--should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	

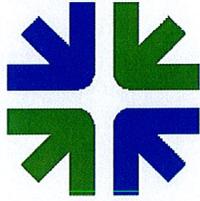
	<p>Add underlined language as follows:</p> <p>3. <u>Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change.</u></p>	<p>3. <u>Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change.</u> <u>Development in these areas should be discouraged. Habitat preservation and restoration in these areas, including acquisition where necessary to ensure protection, should be encouraged.</u></p>
	<p>Add underlined language as follows:</p> <p>4. <u>Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity. The strategy should incorporate an adaptive management approach, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared and regularly updated in consultation with government agencies with authority over flood protection. The regional strategy should determine where existing development should be protected and infill development encouraged, where new development should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>	
	<p><u>The goals of the strategy should be to:</u></p> <p>a. <u>advance regional public safety and prosperity by protecting most existing shoreline development, especially 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, major parks, recreational areas and trails;</u></p>	
	<p>b. <u>enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;</u></p>	

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p><u>c. integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p> <p><u>d. encourage innovative approaches to sea level rise adaptation;</u></p> <p><u>e. identify a framework for integrating the adaptation responses of multiple government agencies;</u></p> <p><u>f. integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;</u></p> <p><u>g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u></p> <p><u>h. address any existing contamination and the implications of the contamination on water quality;</u></p> <p><u>i. support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u></p> <p><u>j. identify actions to prepare and implement the strategy, including any needed changes in law; and</u></p> <p><u>k. identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.</u></p>	

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>6. <u>Until a regional sea level rise adaptation strategy can be completed, when planning or regulating new development in areas vulnerable to future shoreline flooding, new projects should be limited to:</u></p> <p>a. <u>minor repairs of existing facilities or small projects that do not increase risks to public safety;</u></p> <p>b. <u>transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p> <p>c. <u>infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u></p> <p>d. <u>redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the redevelopment will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding 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 sustainability in all elements of the project; (iii) a permanent financial strategy that will guarantee the general public will not be</u></p>	<p>6. <u>Until a regional sea level rise adaptation strategy can be completed, when planning or regulating new development in developed areas vulnerable to future shoreline flooding, new projects should be limited to:</u></p> <p>a. <u>minor repairs of existing facilities or small projects that do not increase risks to public safety;</u></p> <p>b. <u>transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p> <p>c. <u>infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u></p> <p>d. <u>redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the redevelopment will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key</u></p>

	<p><u>burdened with the cost of protecting the project from any sea level rise or storm damage in the future;</u></p> <p>e. <u>projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require shoreline protection during the life of the project; or</u></p> <p>f. <u>public parks, natural resource restoration or environmental enhancement projects.</u></p>	<p><u>uncertainties for the life of the project; (ii) measures that will achieve resilience and sustainability in all elements of the project; (iii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future;</u></p> <p>e. <u>projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require shoreline protection during the life of the project; or</u></p> <p>f. <u>public parks, natural resource restoration or environmental enhancement projects.</u></p>
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CITY OF EMERYVILLE

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EMERYVILLE, CALIFORNIA 94608-3517

Tel: (510) 596-4300 FAX: (510) 658-8095

December 8, 2010

Joseph LeClair, Chief Planner
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco CA 94111
joel@bcdca.gov

Re: Proposed Bay Plan Amendment Concerning Climate Change

Dear Mr. LeClair:

Thank you for the opportunity to comment on the proposed climate change amendment to the Bay Plan.

Attached please find a resolution adopted by the Emeryville City Council on December 7, 2010 regarding the proposed amendment.

Sincerely,



Patrick D. O'Keeffe
City Manager

Cc: Helen Bean, Director of Economic Development and Housing
Charles S. Bryant, Director of Planning and Building
Diana Keena, Associate Planner

RESOLUTION NO. 10- 193

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF EMERYVILLE REGARDING CLIMATE CHANGE POLICIES IN THE SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION'S PROPOSED BAY PLAN AMENDMENTS

WHEREAS, the San Francisco Bay Conservation and Development Commission (BCDC) is considering a set of amendments to the Bay Plan that include climate change policies; and

WHEREAS, BCDC, the Association of Bay Area Governments, the Metropolitan Transportation Commission and the Bay Area Air Quality Management District are working with local governments, other organizations and the public to develop a Sustainable Communities Strategy to reduce emissions of greenhouse gases that lead to climate change; and

WHEREAS, the Sustainable Communities Strategy process seeks to concentrate development in Priority Development Areas (PDAs) near transit and away from Priority Conservation Areas rich in natural resources; and

WHEREAS, BCDC's jurisdiction is within 100 feet of mean high tide; and

WHEREAS, the climate action policies in BCDC's proposed Bay Plan Amendments could be interpreted as applying to areas outside BCDC's jurisdiction, possibly complicating approval of development projects in PDAs, including some low-lying lands in the Emeryville PDA; and

WHEREAS, BCDC needs climate change policies to guide the Commission in considering BCDC permits for projects within BCDC's jurisdiction; and

WHEREAS, a separate document containing non-binding, advisory policies could be useful to communities in adapting to sea level rise; and

WHEREAS, the Sustainable Communities Strategy could provide a regional framework for addressing the effects as well as the causes of climate change; now, therefore, be it

RESOLVED, that the City Council of the City of Emeryville requests that BCDC take the following actions:

- (1) Add language to the climate change policies in the proposed Bay Plan Amendments stating that the climate change policies apply only to BCDC permits within BCDC's jurisdiction,
- (2) Create a separate advisory guidance document for local governments to use when evaluating other projects subject to sea level rise, and
- (3) Work through the Sustainable Community Strategy process to develop a regional strategy for adapting to sea level rise, protecting Priority Development Areas from sea level rise and designating undeveloped areas that are subject to sea level rise as Priority Conservation Areas.

ADOPTED by the City Council of the City of Emeryville at a regular meeting held Tuesday, December 7, 2010, by the following vote:

AYES: (5) Mayor Davis, Vice Mayor West and Councilmembers Atkin, Brinkman and Bukowski

NOES: (0) None ABSTAINED: None

EXCUSED: None ABSENT: None


MAYOR

APPROVED AS TO FORM:

CITY ATTORNEY

ATTEST:

CITY CLERK

Department of
Conservation &
Development

Contra
Costa
County

Catherine O. Kutsuris
Director

Aruna Bhat
Deputy Director
Community Development Division

Community Development Division

County Administration Building
651 Pine Street
North Wing, Fourth Floor
Martinez, CA 94553-1229



Phone:

December 16, 2010

Mr. Joe LaClair, Chief Planner
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

Subject: *Comments on Bay Plan Amendment No. 1-08, Concerning Climate Change*

Dear Mr. LaClair

Contra Costa County has approximately 25 miles of shoreline that fall within the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC), including the incorporated communities of North Richmond, Rodeo, and Crockett. The Contra Costa County Department of Conservation & Development has been closely following the debate related to the proposed Bay Plan Amendment No 1-88, Concerning Climate Change, since this proposal could fundamentally affect adopted and future plans for shoreline development within these unincorporated communities in Contra Costa County.

This Department has reviewed the BCDC reports and the numerous comments submitted to date on the proposed Bay Plan Amendment. We note that of all the comments submitted to date, we find those submitted by the San Francisco Planning and Urban Research Association (SPUR) to be most thoughtful. In their November 10, 2010 comment letter, SPUR suggested a number of constructive changes to the proposed Bay Plan Amendment that appear to address many of the key concerns or criticism raised by commenters on the proposal. There were five key changes recommended in SPUR's 11/10/2010 letter, and outlined, as followed:

1. SPUR recommended defining "infill development" to include: underutilized land within urbanized areas that are served by existing infrastructure including transit, conversion of former military bases, adaptive reuse of existing structures, and ABAG Priority Development Areas.
2. They recommended that the amendment include a policy to encourage local governments, and the BCDC within its jurisdiction, to allow infill projects (as defined above) to proceed, and allow other projects to proceed if they have an adaptation and financial strategy, while a regional sea level rise strategy is being developed.
3. They asked that BCDC provide formal assurances in new findings clarifying that the proposed Bay Plan Amendment does not expand BCDC's jurisdiction.

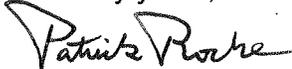
4. Additionally they asked that BCDC provide assurances to give certainty to activities that may be undertaken in the future that are within the scope of an existing permit.
5. Finally, they asked that the Bay Plan Amendment include a statement that BCDC would work with other agencies and local governments to identify long-term regional flood protection strategies and create consistency with SB 375 Sustainable Communities Strategy.

Although our Board of Supervisors has not adopted a formal position on the proposed Bay Plan Amendment, and since the comment deadline is due to close on December 17th, we felt it was important at this stage in the BCDC hearing process to urge your commission's consideration of the changes recommended in SPUR's 11/10/2010 letter. SPUR has offered a thoughtful and constructive set of changes to the proposal that address this Department's primary concerns with how the BCDC policy could affect shoreline development along Contra Costa County's shoreline.

As a parting thought, the Department asks that BCDC, in conjunction with the adoption of the Bay Plan Amendment, consider establishing a protocol for conducting sea level rise risk analysis through the environmental review process under the California Environmental Quality Act (CEQA). The protocol could be used by local and regional agencies when they are conducting CEQA review for projects that are subject to BCDC jurisdiction. At the suggestion of your staff, we did review two recently prepared Environmental Impact Reports (EIR), Hercules Intermodal Transit Center EIR and the Treasure Island Redevelopment Plan EIR, which both incorporated sea level rise risk analysis. While these two EIR examples provided us with some insight on how to conduct such analysis, it would most helpful if BCDC could establish a protocol that clearly identifies methodologies and parameters for conducting sea level rise analysis. This protocol would be useful to lead or responsible agencies under CEQA, environmental consultants, shoreline development interests, and the general public.

Thank you for your consideration of these comments. Please feel free to contact me should you have any questions regarding these comments.

Sincerely yours,



Patrick Roche
Principal Planner

CC: Supervisor John Gioia, District I (BCDC Commissioner)
Members, Board of Supervisors
D. Twa, County Administrator
C. Kutsuris, Director, Department of Conservation & Development
J. Kennedy, Deputy Director – Redevelopment, Department of Conservation & Development
M. Avalon, Deputy Director –Flood Control, Public Works Department



December 16, 2010

Dr. Sean Randolph, Chairman
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

RE: Proposed Bay Plan Amendment No. 1-08 Addressing Climate Change

Dear Dr. Randolph,

I am the General Manager of the Hampton Inn and Suites at the Suisun City Waterfront. As a waterfront business in a developing area, we have real concerns about sea level rise, and how the prospect of sea level rise translates into new polices and regulations for properties that may be impacted, including our own. We look forward to the meeting in Suisun City on this issue on January 12, 2011, and anticipate that BCDC staff will engage in an open and receptive dialogue in which we can share the local government and private business perspective on the potential impacts, and perhaps unintended consequences, of some of BCDC's proposed amendments to the Bay Plan.

At prior meetings, you and your Board have asked that written comments be submitted to the Board by December 17, 2010 that document our concerns, relative to the BCDC's proposed Bay Plan amendments. I offer the following

- The proposed amendments are being pushed through before national and statewide reports on the issue of climate change and sea level rise are completed. Why, for example, should the amendment process not wait until the final report from the National Academy of Sciences is released? A study that covers California, Oregon and Washington, and which is being initiated in January of 2011?
- California needs to find the right balance between the State regulatory environment, local control and economic development, and to accomplish this, **DON'T RUSH THE PROCESS!**
- Collaboration and sharing of local perspectives will benefit the final outcome. It may take longer than four more months. Work towards the April 2011 goal set by BCDC, but consider that a collaborative process may take more time.
- BCDC has a map that shows "inundation zones" where water is shown to flow as the sea level rises. However, as is disclaimed on the map, this analysis **DOES NOT** account for existing shoreline protection, which in turn, implies a much larger inundation area than is likely. Please provide a map that accounts for existing shoreline protection rather than the current provocative map.





- Regarding existing development: Will current property owners within BCDC's jurisdiction lose the right to rebuild after a fire or natural disaster or other catastrophic events?
- Related to the above, will current property owners within BCDC's jurisdiction lose the right to remodel their building or modify their footprint?
- The proposed Bay Plan amendments are assuming a 55 inch rise in sea level. Does this figure take into account the actions, efforts and requirements of so many other state authorities to reduce green house gas emissions?
- What are other major metropolitan areas on the coast doing relative to the planning and regulation of development due to anticipated sea level rise?
- Doesn't this issue warrant a statewide solution, at the least, versus a regional strategy?
- Related to the above, ensure that areas designated for growth, such as infill sites and Priority Development Areas (PDA's as designated by the Association of Bay Area Governments) are exempt from development restrictions based on climate change.
- Supporting the above, in the resulting policy document, clearly identify infill areas and PDA's that will be exempt from development restrictions based on climate change to avoid conflict and the need for expensive litigation.

Clearly, there is much work to accomplish before tackling the complex issue of amending the Bay Plan regarding climate change. As a concerned local businessman trying to navigate my business through historically challenging time, I am anxious to collaborate with you on these tasks and appreciate your receptiveness my input. I look forward to participating in the process and trust that we will be in a position to achieve our collective goals.

Sincerely,

Hartmut Ott
General Manager



**TOM GENTRY CALIFORNIA COMPANY
560 North Nimitz Highway, Suite 211
Honolulu, Hawaii 96817**

December 16, 2010

VIA E-Mail (joel@bcdc.ca.gov) and U.S. Mail

Dr. Sean Randolph, Chairman
San Francisco Bay Conservation and Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111

RE: Proposed Bay Plan Amendment No. 1-08 Addressing Climate Change

Dear Dr. Randolph,

Thank you for the opportunity to submit written comments to the Board regarding the BCDC's proposed Bay Plan amendments.

Tom Gentry California Company has been working with the City of Suisun City (the "City") for several years on a 480-acre project located at the western edge of the City, contiguous with State Hwy 12, Pennsylvania Avenue and Cordelia Road. The proposed project involves development of less than 20% of the area into commercial and residential use, while retaining, enhancing and protecting over 80% of the area into mitigation and conservation uses. The commercial uses would provide much needed tax revenues for the City, and the proposed residential uses would help to meet the City's need for housing. By retaining, enhancing and protecting over 80% of the area for mitigation and conservation uses, the City's environmental goals and objectives would also be met.

Concerns:

1. We are very concerned about the potential impacts and/or unintended consequences of the BCDC's proposed amendments on TGCC's substantial investment in these lands. TGCC has already invested considerable time and funds in the proposed project, which will benefit both public and private interests. Like other private landowners, we will be significantly impacted by any new regulation, and we therefore stress the need to make sure that the amendments be well thought out, clearly defined and appropriately targeted.
2. Please consider that rushing the proposed amendments through before national, regional and statewide reports on the issue of climate change and sea level rise are completed will only serve to strengthen legal claims that BCDC's actions were premature, arbitrary and capricious.
3. Please consider that seriously needed economic development projects will be hindered and/or rendered infeasible by implementing another layer of overly strict development restrictions, resulting in burdensome processing costs and unduly long delays,

Inquiries:

1. BCDC has a map that shows "inundation zones" where water is shown to flow as the sea level rises. However, as is disclaimed on the map, this analysis does not account for existing shoreline

protection, which in turn implies a much larger inundation area than is likely. It would be appropriate to use a map that accounts for existing shoreline protection.

2. A staff report dated November 24, 2010 provides an overview of the State Climate Adaptation Strategy and states that *"vulnerable shoreline areas containing existing development that have regionally significant economic, cultural, or social value may have to be protected, and infill development in these areas may be accommodated. State agencies should incorporate this policy into their decisions and other levels of government are also encouraged to do so."* In order to alleviate local government and private property owners' concerns about precluding development, these areas that should be protected in the event of sea level rise as anticipated need to be identified now.

3. What is the status of the CAAP's report, due by December 2010, regarding strategies to reduce California's greatest risks?

4. The proposed amendments include proposals to restrict "new development" so that it doesn't become a public burden to save from future sea level rise. What is the percentage of shoreline development currently under the BCDC's purview that is developed versus infill versus open space/undeveloped?

5. The proposed amendments appear to assume a 55-inch rise in sea level over 100 years. Does this figure take into account the actions, efforts and requirements of so many other state authorities to reduce green house gas emissions? Are there periodic SLR benchmarks along the way that, if not reached, would provide for voiding the plan? What are other major metropolitan areas on the coast doing relative to the planning and regulation of development due to anticipated sea level rise? Doesn't this issue warrant a statewide solution versus a regional strategy?

6. How do the proposed amendments comport with: a) Governor-Elect Brown's position on Executive Order 2-13-08, which identifies the need for "statewide consistency" in planning for sea level rise; b) Item 8 of Executive Order 2-13-08, which states that *"By May 30, 2009, Office of Planning and Research, in cooperation with the California Resources Agency, shall provide state land-use planning guidance related to sea level rise and other climate change impacts."* State land-use planning guidance related to SLR should be completed before the development of regional land-use planning guidance or regulation.

7. Shouldn't the proposed amendments be subject to CEQA review, so that there will be a more comprehensive evaluation of the potential environmental impacts?

Clearly, much work remains to be done before taking on the complex issue of amending the Bay Plan regarding climate change. We are anxious to collaborate with you on these tasks and we look forward to participating in a well thought out process that leads to achieving mutually beneficial goals.

Sincerely,

TOM GENTRY CALIFORNIA COMPANY



By Dawn Suyenaga, Vice President

cc: City of Suisun City



December 17, 2010

Joe LaClair
San Francisco Bay Conservation and Development Commission
50 California Street, Ste 2600
San Francisco, CA 94111

Via electronic mail to joel@bcdca.gov

Re: Proposed San Francisco Bay Plan Amendment No. 1-08 Concerning Amendment of Various Sections of the Bay Plan to Address Climate Change and to Add A New Climate Change Section with New Findings and Policies

Dear Mr. LaClair:

Thank you for the opportunity to submit these comments on behalf of San Francisco Baykeeper (Baykeeper) and our 1,500 members. We are writing to strongly support the efforts of San Francisco Bay Conservation and Development Commission (BCDC) to adopt San Francisco Bay Plan Amendment No. 1-08 regarding Climate Change (Amendment). In the public interest, BCDC must insist on developing policies based on best available science as well as existing guidance and policies contained in the Governor's California Climate Adaptation Strategy (CAS), Federal Coastal Zone Management Act (CZMA), California Environmental Quality Act (CEQA) Guidelines, as well as existing policies of the San Francisco Bay Plan (Bay Plan).

Please accept these comments in addition to those submitted by Baykeeper on October 7, 2010 in response to the release of the September 3, 2010 *Draft Staff Report and Revised Preliminary Recommendation* (September 3 Staff Recommendation). This letter addresses the December 10, 2010 options appraisal released by BCDC intended to gain broader support for the Amendment. Based on extraordinary efforts by BCDC Staff to conduct outreach and make every effort to respond to comments, public support for this Amendment has increased enormously. However, not everyone will be satisfied with the final draft of this Amendment, nor will everyone accept the notion that BCDC should be spearheading climate change adaptation measures. This should not prevent Staff from presenting the Amendment for vote as soon as possible, since further delay would likely weaken the proposed Amendment as well as BCDC's ability to effectively regulate and achieve its mandates contained within the California CAS.



Pollution hotline: 1 800 KEEP BAY
www.baykeeper.org

785 Market Street, Suite 850
San Francisco, CA 94103
Tel (415) 856-0444
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RESPONSE TO THE DECEMBER 10, 2010 STAFF REPORT ON POLICY ALTERNATIVES FOR BAY PLAN AMENDMENT NO. 1-08 CONCERNING CLIMATE CHANGE

In preparation for the December 16, 2010 hearing Commissioners were asked to consider alternatives regarding Risk Assessments, appearing as Climate Change Policy 1 in the September 3 Staff Recommendation, Regional Strategy (Climate Change Policy #5) and Interim Development Policy (Climate Change Policy #6). Refer below to our recommended approaches for addressing these topics.

Risk Assessments

Climate Change Policy #1 calls for the preparation of risk assessments for planning shoreline area and designating larger projects within the Commission's permit jurisdiction. Baykeeper supports Possible Alternative #1, which would retain the existing policy direction with appropriate language modifications. In effort to provide more clarity regarding the scope and intent of the risk assessments we support the following changes to the language in the September 3, 2010 Staff Recommendation, as highlighted in red. This language has been informed by personal experience preparing flood risk assessments as a professional hydrologist:

For any project located within an area potentially subject to sea-level rise at the 2100 time horizon, a site-specific flood risk assessment must be prepared to identify all potential flood mechanisms, degrees of uncertainty, and consequences of defense failure. Site-specific risk assessments should demonstrate that the project shall maintain resiliency to gradual sea-level rise over the life of the development as well as during storm surges at varying return frequencies. In addition, risk assessments should demonstrate that a project shall not exacerbate existing flood risk through net loss of flood storage capacity. Risk assessments should be accompanied and informed by the results of 2-D flood models specific to the proposed development. For complex sites or breach analysis studies, BCDC may request more advanced 3-D modeling pending input from qualified agencies or outside reviewers. Projects exempt from this requirement include habitat restoration and site remediation projects that will not alter the flood storage capacity of the site. ~~When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best science-based projections currently available, should be used in the risk assessment.~~

Regional Strategy

Climate Change Policy #5 calls for the preparation of a regional adaptation strategy to address sea level rise. While we are frustrated with the proposed duration of 5-10 years until completion of such a strategy we support Possible Alternative #1, which calls for retaining the existing policy direction in the language. We have no suggestions for improvement of this policy and support inclusion of the policy as is within the final Amendment. BCDC and the Joint Policy Committee are the most appropriate agencies for championing such a strategy and ensuring that science and engineering takes a more prominent

position in the sea-level rise adaptations approaches than we have been seen to date. However, exclusion or weakening of the Policy within the Amendment would effectively prevent any similar strategy from being prepared over the course of the next 20 years.

Development of a Regional Strategy is particularly important in that it calls for shoreline mapping studies to illustrate areas vulnerable to flooding based on projections of future sea level rise. Such studies should be considered the highest-priority effort since the U.S. Army Corps of Engineers and Federal Emergency Management Agency (FEMA) have suggested that such maps shall not be produced in the foreseeable future. As a region we cannot wait for the federal government to conduct high quality mapping efforts. Such efforts would benefit the region economically by demonstrating to insurers and developers that Bay Area governments and public agencies are serious about risk management and fully disclosing flood risks for the sake of public safety, environmental protection and public investment of flood management. Similar studies have been undertaken in Europe, which consider the linear increases in sea-level rise associated with thermal expansion and ice-cap melting along with dynamic increases in storm surge frequency and intensity. California maintains the technical capacity within universities and the private sector to conduct such studies, which should be funded through a coalition of local, regional and state government.

While maps are an important tool they cannot replace the utility of site-specific flood risk assessments, which must be required under Climate Change Policy #1. Some comments on the Amendment have suggested that cities need definitive stand-alone maps to assess risk and inform their decision-making process. However, regional mapping efforts cannot adequately assess risk at the local level. Nor can they adequately consider in-situ flood protections, which require intensive assessment and consideration of the scope and types of projects being developed behind them. For an example of the type of policy that addresses such high levels of uncertainty and complexity refer to those developed in the United Kingdom, where site-specific flood risk assessments are informed by government-prepared maps that depict various levels of potential risk.¹

Interim Development Policy

Climate Change Policy #6 proposes that development in low-lying areas within the Commission's jurisdiction be limited to a broad list of project types. While we broadly support this proposed policy we encourage that Staff consider Possible Alternative #2, which calls for case-by-case evaluation of each proposed project based on a set of criteria, with a list of the types of projects that would be considered acceptable. However, such an approach should only be considered in previously developed areas and development in undeveloped areas should be limited to maintenance of essential infrastructure.

¹ Refer to flood risk maps available through England's Environment Agency: www.environment-agency.gov.uk as well as flood risk planning documents associated with Planning Policy 25: Development and Flood Risk: <http://www.communities.gov.uk/publications/planningandbuilding/pps25floodrisk>

December 17, 2010

Within the context of the existing policy, such development would be considered infill. However, this policy could greatly benefit from further explanation of what constitutes infill development and what types of projects would be considered in these areas. Tentatively, we recommend that suitable development within areas at risk of future sea-level rise include non-residential developments that can adapt to rising sea levels. In addition, we would suggest that Policy #6 discourage land-raising activities as a means of lifting a site outside the floodplain. Such activities result in ecologically destructive outcomes and exacerbate flood risk elsewhere by displacing flood waters onto adjacent land. Where land-raising is proposed developments should be required to conduct on-site mitigation for the loss of flood storage capacity.

An excellent example of where such an approach is currently being implemented is in England, where *Planning Policy 25: Development and Flood Risk (PPS25)*, specifies suitable development projects within previously developed flood prone areas.² In extraordinary situations where a development provides wider sustainability benefits to the community that outweigh flood risk a project must pass what is known as an Exception Test. I encourage Staff to review both PPS25 and the accompanying Practice Guide for ideas on how to improve the Policy based on years of applied knowledge.³

As one of California's first local planning strategies dedicated to addressing sea level rise, BCDC's development of a precautionary climate adaptation policy will not only facilitate the effective management of shoreline areas around the Bay, but will no doubt serve as a model for the implementation of local climate adaptation strategies throughout the state. As a leading advocate for San Francisco Bay and its communities, Baykeeper urges BCDC to implement its coastal management authority and public trust duties to the fullest extent possible through incorporation of this Amendment and taking the lead on development of a comprehensive sea-level rise adaptation strategy for the region.

Sincerely,



Ian Wren

Staff Scientist

San Francisco Baykeeper

² Planning Policy 25: Development and Flood Risk

<http://www.communities.gov.uk/publications/planningandbuilding/pps25floodrisk>

³ Planning Policy 25: Development and Flood Risk, Practice Guide

<http://www.communities.gov.uk/publications/planningandbuilding/pps25guideupdate>

Office of Mayor Gavin Newsom
City & County of San Francisco



Johanna Partin
Director, Climate Protection Initiatives

December 17, 2010

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

Dear Mr. Randolph and Mr. Travis:

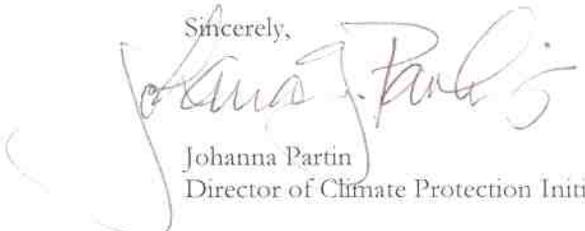
On behalf of Mayor Gavin Newsom and the City and County of San Francisco, I would like to offer additional comments on BCDC's proposed amendments to the Bay Plan as a supplement to the comments we previously submitted on November 12. Our additional comments emphasize two points:

1. **The proposed Bay Plan Amendment policies should be expanded to consider existing transportation assets and other infrastructure in addition to development when considering shoreline protection or removal of development.** In San Francisco, not only are several neighborhoods vulnerable to sea level rise, but a significant share of our transportation and other infrastructure also is located alongside the San Francisco Bay. We request that the proposed Bay Plan Amendment's discussion of the need to develop an Adaptation Strategy be expanded to consider infrastructure, in addition to development.
2. **Existing regional transportation plan investments and voter-approved sales tax projects should not be prevented in advance of the development of a Bay Area Adaptation Strategy.** We are supportive of and look forward to collaborating with BCDC in development of a Bay Area Adaptation Strategy. However, we also anticipate that this will be long, complex and challenging work. Thus, we want to ensure that local and regional and local priority transportation projects, such as those in the voter-approved Proposition K sales tax program, are not delayed by the completion of an Adaptation Strategy.

We suggest revisions that incorporate these two points for your consideration in the attached document, in red (original comments are in blue, double underlined). For your convenience, our new comments have been summarized in the table below.

Thank you for your consideration of these additional comments. Please feel free to contact me with any questions.

Sincerely,


Johanna Partin
Director of Climate Protection Initiatives

Climate Change

Findings	Staff Analysis
<p>Add underlined language as follows: <u>st. Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain critical habitat or provide opportunities for habitat enhancement. Allowing development in these areas would preclude important could potentially conflict with habitat enhancement opportunities. Some developed areas may be suitable for ecosystem restoration if existing development and infrastructure is removed to allow the Bay to migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods.</u></p>	<p>The new finding acknowledges some undeveloped areas contain critical habitat or could be enhanced for habitat, and some developed areas may be ideal for bay migration and habitat enhancement as sea level rises. It also acknowledges that relocating development raises difficult public policy issues and costs.</p>

Climate Change

Policies	Staff Analysis
<p>Add underlined language as follows: 5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas, and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.</u></p> <p><u>The strategy should incorporate an adaptive management approach, be consistent with sustainable communities strategies required by SB 375, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared under the direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection. Particular attention should be given to identifying and encouraging the development of long-term regional flood and storm water protection strategies that may be beyond the fiscal resources of individual local governments.</u></p> <p><u>The regional strategy should identify where and how existing development and</u></p>	<p>The new policy recommends that the region develop and regularly update a regional strategy to adapt to 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 management planning that is necessary when working with a high degree of uncertainty, complex, interconnected systems, limited resources, and the ongoing release of new scientific information. <u>The framework should also be consistent with sustainable communities strategies required by SB 375.</u></p>

<p><u>infrastructure</u> should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.</p>	
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Climate Change

Policies	Staff Analysis
<p>6. b. transportation facilities - <u>including projects that are: 1) included in the most recently adopted Regional Transportation Plan; and/or 2) included in a voter-approved transportation sales tax Expenditure Plan - public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p>	<p>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, <u>transportation improvements to benefit infill development and/or implement regional or local transportation plans</u>, natural resource restoration or enhancement, development providing significant regional benefits, interim or temporary uses, redevelopment that meets certain criteria, 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.</p>

Protection of the Shoreline Protection

Policies	Staff Analysis
<p>Add underlined language and delete struck-through language as follows: 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 <u>to protect existing or planned shoreline development or infrastructure</u> from flooding or erosion; (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</u></p>	<p>The policy has been updated and expanded to reflect the potential need to provide protection for existing development 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.</p>

account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; and (e) the protection is integrated with current or planned adjacent shoreline protection measures.

Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes should participate in the design.

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 relate to the proposed changes, especially those that the staff is not proposing to change, 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. <u>These recommendations were based on 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 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>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</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 and potential</p>

sediment onto adjacent tidal marshes. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. 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.

impediments to it.

Tidal Marshes and Tidal Flats	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>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 observed that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in the volume of sediment entering the Bay annually 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 may also accelerate, thus potentially exacerbating shoreline erosion and adversely affecting the <u>ecosystem and the sustainability of future wetland ecosystem</u> restoration projects. <u>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 has been altered and how reduced sediment will impact these habitats in combination with climate change. The finding was re-lettered from k. to l.</p>
<p>Add underlined language as follows:</p> <p>m. <u>Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. 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 for wetlands.</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>n. <u>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 tidal habitats 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</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>

<u>these targets.</u>	
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Tidal Marshes and Tidal Flats	
Findings	Staff Analysis
<p>l. <u>o.</u> Plant and animal species not present in San Francisco Bay prior to European contact in the late 18th century, known as non-native species, which thrive and reproduce outside of their natural range have made vast ecological alterations to the Bay and have contributed to the serious reduction of native regulations of certain plants and animals through: (1) predation; (2) competition for food, habitat, and other necessities; (3) disturbance of habitat; (4) displacement; or (5) hybridization. Many non-native species enter the Bay from commercial ship ballast water that is discharged into the Bay. Approximately 170 species have invaded the Bay since 1850, and possibly an additional 115 species have been deliberately introduced. By 2001, over 1,200 acres of recently restored tidal marshes have been invaded by introduced cordgrass species, such as salt meadow cordgrass, dense-flowered cordgrass, English cordgrass and smooth cordgrass. At present an average of one new non-native species establishes itself in the Bay every 14 weeks. Control or eradication is a critical step in reducing the harm associated with non-native species.</p>	<p>The finding was re-lettered from l. to o.</p>
<p>m. <u>p.</u> Fill material, such as rock and sediments dredged from the Bay, can enhance or beneficially contribute to the restoration of tidal marsh and tidal flat habitat by: (1) raising areas diked from the Bay to an elevation that will help accelerate establishment of tidal marsh; and (2) establishing or recreating rare Bay habitat types.</p>	<p>The finding was re-lettered from m. to p.</p>
<p>Policies 1 through 3 – no changes</p>	
<p>Add <u>underlined language</u> and delete struck through language as follows:</p> <p>4. Where and whenever possible <u>feasible</u>, 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</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. Also the purpose of purchasing land to facilitate wetland migration was also added. Deleted “from willing sellers” because it conflicts with the power of eminent domain held by many jurisdictions that overlap with the</p>

65,000 acres of areas diked from the Bay should be	Commission's jurisdiction.
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Tidal Marshes and Tidal Flats	
Policies	Staff Analysis
<p>restored to tidal action <u>to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management 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 habitat restoration <u>and wetland migration.</u></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 processes 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 ecosystem 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 relative <u>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 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</p>	<p>The policy has been updated to add and revise criteria restoration project by focusing on restoring resilient ecosystems, and to include new analysis of the potential for buffer areas for marsh migration where feasible. The policy was re-numbered from 5 to 6.</p>

taken.	
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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.” Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate.</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. It will be driven largely by future greenhouse gas emissions levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. These emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes.</u></p>	<p>The new finding describes how United Nations scenarios are used to address uncertainty regarding future global development and the corresponding impacts of development on climate change.</p>
<p>Add underlined language as follows:</p> <p>c. <u>Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emissions scenarios, the California Climate Action</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 prudent 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. The finding also acknowledges regional factors affecting sea level rise and, references the California Climate Action Team’s projections for California (a mid-century range (11-18 inches) and a end-of-century range (20-55 inches) as a guide for</p>

Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of century. Although these are currently the best science-based sea level rise projections for the West Coast, recent observations of global greenhouse

implementing the policies.

Climate Change	
Findings	Staff Analysis
<p>gas emissions show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. <u>Sea level rise projections will change over time. Therefore, to minimize flood risk For purposes of analysis of future flood risk, it is prudent to rely on higher projections in the a range of possible future sea level rise scenarios based on the best available science at the time of the analysis.</u></p>	
<p>Add underlined language as follows:</p> <p>d. <u>Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Niño events, which generally result in persistent low air pressure, greater rainfall, high winds and higher sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.</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>Add underlined language as follows:</p> <p>e. <u>Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies such as the National Oceanic and Atmospheric Agency, the Federal Emergency Management Agency and the United States Army Corps of Engineers, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using a range of scientifically based higher emissions scenarios, including projections which correspond to</u></p>	<p>The new finding describes the potential for shoreline flooding as sea level rises and the likely need for new shoreline protection to address it, particularly in subsided areas. It recommends using the most current, science-based, regionally specific projections of future sea level rise.</p>

<p><u>higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude new development that cannot be adapted to sea level rise.</u></p>	
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Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>f. <u>Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.</u></p>	<p>The new finding defines two important concepts in climate adaptation planning: shoreline resilience and adaptive capacity. It also defines the related practices of vulnerability and risk assessment and describes the outcomes of these practices.</p>
<p>Add underlined language as follows:</p> <p>g. <u>In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions can include relocating structures out of flood and inundation zones, protecting shorelines, and 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. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems.</u></p>	<p>The new finding defines mitigation as it is commonly used to address climate change. The finding also defines adaptation, points out that mitigation and adaptation efforts can be integrated, and describes the benefits of implementing some adaptation strategies early.</p>
<p>Add underlined language as follows:</p> <p>h. <u>In the context of sea level rise adaptation, innovative approaches will likely include financing mechanisms, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks; maximize</u></p>	<p>The new finding describes the range of likely innovative adaptation approaches and sets criteria for what would constitute an effective innovative strategy. It outlines some of the challenges for developing</p>

<p><u>compatibility with and integration of natural processes; are resilient over a range of sea level, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale.</u></p>	<p>innovative strategies</p>
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Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>i. <u>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. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management actions, and integrating this information into future actions.</u></p>	<p>The new finding defines adaptive management, as it is commonly understood in managing human interventions in complex systems. It also describes how effective adaptive management is implemented.</p>
<p>Add underlined language as follows:</p> <p>j. <u>The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity.</u></p>	<p>The new finding defines sustainability in the context of climate change, resilience and adaptive capacity.</p>
<p>Add underlined language as follows:</p> <p>k. <u>Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, are potentially 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A lack of funding to address projected impacts from sea level rise will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</u></p>	<p>The new finding describes the impacts of flooding on the developed shoreline. It also acknowledges funding limitations for adaptation planning and implementation, and the potential impacts of inaction.</p>

Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p>l. <u>Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost.</u></p>	<p>The new finding describes the impacts of flooding on shoreline recreation areas and trails.</p>
<p>Add underlined language as follows:</p> <p>m. <u>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. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species, including endangered species. The Bay 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 ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or 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>The new finding describes the importance of the Bay ecosystem and 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>
<p>Add underlined language as follows:</p> <p>n. <u>Some Bay Area residents, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone 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, the elderly and those with disabilities.</p>
<p>Add underlined language as follows:</p> <p>o. <u>Approaches for ensuring public safety in developed vulnerable shoreline areas through adaptive management strategies include but are not limited to:</u></p>	<p>The new finding describes the range of potential human development responses to sea level rise.</p>

<p><u>(1) protecting existing and planned infill development; (2) accommodating flooding by building structures that or infrastructure systems that are resilient or adaptable over time; (3) discouraging permanent new development when adaptive management strategies cannot protect public safety; (4) allowing only interim new uses that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) over time and where feasible, removing existing development where public safety cannot otherwise be ensured.</u></p>	
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Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p><u>p. Infill development has been identified in state law as an important strategy for reducing vehicle miles traveled and greenhouse gas emissions. To further these policy objectives, the Association of Bay Area Governments and the Metropolitan Transportation Commission initiated the FOCUS program to develop a regional development strategy that promotes a more compact Bay Area land use pattern. In consultation with local governments and the Commission, the FOCUS program identified Priority Development Areas for infill development in the Bay Area.</u></p>	<p><u>The new finding articulates the value of infill development to the region, and the designation of PDAs as regionally significant infill.</u></p>
<p>Add underlined language as follows:</p> <p><u>pg. Infill development is the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit. Infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities that can be served by transit. Infill development is building homes, businesses, institutions and/or public uses, facilities and infrastructure on vacant, underutilized and/or environmentally degraded lands within existing urbanized areas that are served by existing or planned transit and other supporting infrastructure. Infill development includes the conversion of former military bases, and property adjacent to former military bases, to job-producing or other productive uses, Priority Development Areas, and the adaptive reuse of existing structures. Some vulnerable Bay shoreline areas are already improved with development that has regionally significant economic, cultural or social value, and can accommodate infill development.</u></p>	<p>The new finding defines infill development in the context of Bay Area shoreline development that considers sea level rise.</p>
<p>Add underlined language as follows:</p> <p><u>qr. When planning or regulating development within areas vulnerable to flooding from sea level rise,</u></p>	<p>The new finding acknowledges the need to provide a different approach to regulating minor repairs, small</p>

<p>allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable <u>should be subject to a simpler and more streamlined review and approval process</u> if they do not significantly increase overall risks to public safety.</p>	<p>projects or interim uses that do not increase public safety risks.</p>
<p>Add underlined language as follows:</p> <p>¶s. <u>In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict, local agencies may employ methods including but not limited to: clustering infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; formulating an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; and incorporating measures can be incorporated that will enhance project achieve resilience and sustainability in all elements of the project; and. Government agencies that approve infill or redevelopment projects in low-lying areas should articulate a financing strategy for future flood protection. a permanent financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage caused by sea level rise in the future.</u></p>	<p>The new finding outlines some of the potentially conflicting regional goals and potential safety risks from developing in low-lying areas. It outlines possible methods for minimizing risks and avoiding unfair distribution of costs associated with those risks.</p>

Climate Change	
Findings	Staff Analysis
<p>Add underlined language as follows:</p> <p><u>st.</u> <u>Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain critical habitat or provide opportunities for habitat enhancement. Allowing development in these areas would preclude important could potentially conflict with habitat enhancement opportunities. Some developed areas may be suitable for ecosystem restoration if existing development and infrastructure is removed to allow the Bay to migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods.</u></p>	<p>The new finding acknowledges some undeveloped areas contain critical habitat or could be enhanced for habitat, and some developed areas may be ideal for bay migration and habitat enhancement as sea level rises. It also acknowledges that relocating development raises difficult public policy issues and costs.</p>
<p>Add underlined language as follows:</p> <p><u>tu.</u> <u>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 broad authority and limited capacity of local governments to address climate change and benefits of collaboration.</p>
<p>Add underlined language as follows:</p> <p><u>uv.</u> <u>Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission is working with other regional agencies through the Joint Policy Committee to (1) harmonize Bay Plan Climate Change Policies with the Association of Bay Area Governments (ABAG) Priority Development Areas and update Bay Plan policies if necessary to ensure that appropriate infill development projects are encouraged, and (2) support the Metropolitan Transportation Commission (MTC) and other state, regional and local agencies in the creation of sustainable</u></p>	<p>The new finding describes the need to provide a decision-making framework that resembles the scale of climate change impacts within a manageable scope. It also acknowledges the role the Joint Policy Committee can play in planning for climate change at the regional level.</p>

<u>community strategies required by SB 375.</u>	
<p>Add underlined language as follows:</p> <p><u>vw.</u> <u>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. Consistent with McAteer Petris Act Section 66610, the Commission's Bay Plan policies only have force of law in the Commission's jurisdiction. Bay Plan policies do not expand the Commission's jurisdiction. However, through its Bay Plan policies the Commission can provide guidance to developers, the general public, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation. Local building officials have the primary responsibility for determining the safety of flood mitigation strategies as applied to structures constructed in an inundation or flood risk zone. Local floodplain administrators are responsible for analyzing future floodplain risks associated with sea level rise and addressing these risks in local floodplain management ordinances.</u></p>	<p>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. <u>It also clarifies that the Bay Plan does not expand the Commission's jurisdiction.</u></p>
<p>Add underlined language as follows:</p> <p><u>x.</u> <u>Existing guidelines under the California Environmental Quality Act provide for analysis of whether a project in an inundation zone will expose people or structures to a significant risk of loss, injury or death involving flooding.</u></p>	<p><u>The new finding describes existing CEQA guidelines for analysis of flood risks.</u></p>
<p>Add underlined language as follows:</p> <p><u>y.</u> <u>Projects or activities that may be undertaken in the future within the scope of an existing permit for a phased development are governed exclusively by the terms of the existing permit, and are not subject to any Bay Plan policies adopted subsequent to the approval of the permit.</u></p>	<p><u>The new finding clarifies that the Bay Plan Climate Change findings and policies do not impact future activities for phased development under an existing permit.</u></p>
<p>Add underlined language as follows:</p> <p><u>z.</u> <u>With rare exceptions, projects and other activities in areas potentially subject to future inundation but outside of the Commission's permit jurisdiction do</u></p>	

<p><u>not affect areas within the Commission’s permit jurisdiction, and therefore will not be subject to the consistency requirements of the federal Coastal Zone Management Act of 1972.</u></p>	
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<p style="text-align: center;">Climate Change</p>	
<p style="text-align: center;">Findings <u>Policies</u></p>	<p style="text-align: center;">Staff Analysis</p>
<p>Add underlined language as follows:</p> <p>1. <u>When planning shoreline areas or designing larger shoreline projects, local agencies should undertake a risk assessment and may should be prepared, coastal inundation maps based on the estimated 100-year flood elevations that take <u>the best available scientific estimates of future sea level rise and current or planned flood protection</u> into account. A range of sea level rise projections for mid-century and end of century, <u>including at least one high estimate that is based on the best science-based projections currently scientific data</u> available, should be used in the risk assessment. <u>Inundation maps should be prepared under the direction of a coastal engineer.</u></u></p>	<p>The new policy requires assessment of sea level rise and flood risks in shoreline area planning and project design for permit applications submitted to BCDC.</p>
<p>Add underlined language as follows:</p> <p>2. <u>To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects--other than minor repairs of existing facilities, small projects that do not increase risks to public safety, interim projects, and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place as defined in finding (q)--should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project by a qualified engineer. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	<p>The new policy requires certain developments to be designed to be resilient to sea level rise based on a mid-century sea level rise protection and for developments of longer duration to also develop an adaptive management plan for addressing ongoing sea level rise, based on a sea level rise projection.</p>
<p>Add underlined language as follows:</p> <p>3. <u>Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or</u></p>	<p>The new policy provides that low-lying areas with diverse habitat values or those that are suitable for natural resource enhancement</p>

<p><u>possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change, unless inland migration would be inconsistent with applicable priority use designations, or with an approved environmental remediation remedy prepared in compliance with applicable federal or state laws.</u></p>	<p>should be protected or enhanced, and where appropriate, permanently protected for these purposes.</p>
<p>Add underlined language as follows:</p> <p>4. <u>Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	<p>The new policy encourages the development and implementation of innovative sea level rise adaptation strategies.</p>

Climate Change	
Policies	Staff Analysis
<p>Add underlined language as follows:</p> <p>5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas, and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.</u></p> <p><u>The strategy should incorporate an adaptive management approach, be consistent with sustainable communities strategies required by SB 375, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared <u>under the direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection. Particular attention should be given to identifying and encouraging the development of long-term regional flood and storm water protection strategies that may be beyond the fiscal resources of individual local governments.</u></u></p> <p><u>The regional strategy should identify where and how existing development and infrastructure should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>	<p>The new policy recommends that the region develop and regularly update a regional strategy to adapt to 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 management planning that is necessary when working with a high degree of uncertainty, complex, interconnected systems, limited resources, and the ongoing release of new scientific information. <u>The framework should also be consistent with sustainable communities strategies required by SB 375.</u></p>
<p>The goals of the strategy should be to:</p> <p>a. <u>advance regional public safety and economic prosperity by protecting most existing and planned shoreline development, especially 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, major parks,</u></p>	<p>The new policy acknowledges 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; it includes sustainability as a criteria;</p>

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<p><u>recreational areas and trails;</u></p>	
<p>b. <u>enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;</u></p>	

<p style="text-align: center;">Climate Change</p>	
<p style="text-align: center;">Policies</p>	<p style="text-align: center;">Staff Analysis</p>
<p>c. <u>integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p> <p>d. <u>encourage innovative approaches to sea level rise adaptation;</u></p> <p>e. <u>identify a framework for integrating the adaptation responses of multiple government agencies;</u></p> <p>f. <u>integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;</u></p> <p>g. <u>advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u></p> <p>h. <u>address any existing contamination and the implications of the contamination on water quality;</u></p> <p>i. <u>support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u></p> <p>j. <u>identify actions to prepare and implement the strategy, including any needed changes in law; and</u></p> <p>k. <u>identify mechanisms to provide information, tools, and financial resources so local governments can</u></p>	

<p><u>integrate regional climate change adaptation planning into local community design processes.</u></p>	
<p>Add underlined language as follows:</p> <p>6. <u>Subject to findings (x) and (y) above, until a regional sea level rise adaptation strategy can be completed and local adaptive management standards are developed, local governments, together with the Commission in its jurisdiction, should evaluate new development projects in areas vulnerable to future shoreline flooding on a case-by-case basis. Projects that should proceed are:</u></p> <p>a. minor repairs to existing facilities or small projects that do will not increase risks to public safety;</p> <p>b. <u>transportation facilities - including projects that are: 1) included in the most recently adopted Regional Transportation Plan; and/or 2) included in a voter-approved transportation sales tax Expenditure Plan - public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p>	<p>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, <u>transportation improvements to benefit infill development and/or implement regional or local transportation plans</u>, natural resource restoration or enhancement, development providing significant regional benefits, ineterim or temporary uses, redevelopment that meets certain criteria, 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.</p>

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Climate Change	
Policies	Staff Analysis
<p>e. infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</p> <p>d. redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the redevelopment will</p> <p>c. <u>infill development as defined in finding (q) that is located in an area that will likely be protected whether or not the development takes place;</u></p> <p>d. <u>other development or redevelopment that (1) provides significant regional benefits and meets regional goals or infill development as defined in finding (q) by concentrating employment or housing near adequate transit service sufficient to serve the project, and that includes the following elements: (1) an adaptation strategy for dealing with rising sea level and shoreline flooding with</u></p>	

<p><u>definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (2) measures that will achieve enhance project resilience and sustainability in all elements of the project; (3); a permanent financial strategy that addresses the potential will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage due to sea level rise in the future; or;</u></p> <p>e. <u>projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require additional shoreline protection during the life of the project beyond those flood mitigation strategies that are proposed as part of the project; and -</u></p> <p>f. <u>public parks, natural resource restoration or environmental enhancement projects.</u></p>	
<p>7. <u>To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.</u></p>	<p>The new policy advocates for good government and coordination in project reviews when jurisdictions overlap.</p>
<p>Add underlined language as follows:</p> <p>8. <u>In any area potentially subject to future inundation but outside of the Commission’s jurisdiction, a project that is or may be inconsistent with any Bay Plan climate change policy should not be deemed by any lead or responsible agency as inconsistent with the Bay Plan for purposes of environmental review under CEQA.</u></p>	<p><u>The new policy recommends that government agencies reviewing projects that are not consistent with advisory climate change policies outside of the Commission’s jurisdiction should not make a finding of inconsistency with the Bay Plan for purposes of CEQA.</u></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 relate to the proposed changes, especially those that the staff is not proposing to change, 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,</u> heavy rainfall, high tides, and winds blowing onshore. The most effective way <u>To prevent such damage, is to locate projects and facilities</u> structures on fill or near the shoreline should be above the a <u>highest expected water level 100-year flood level that takes future sea level rise into account,</u> during the expected life of the project, or should be protected for the expected life of the project by <u>Other approaches that can reduce flood damage include protecting structures or areas with levees, of an adequate height seawalls, tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding, float, or are adaptively designed and managed to address sea level rise over time.</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 change. 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</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 and to reconcile these two findings and policy sections.</p>

extraction, is variable around the Bay. Consequently, some parts of the Bay will experience a greater	
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Safety of Fills	
Findings	Staff Analysis
<p>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. 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> <u>Where subsidence occurs, more extensive levees shoreline protection and wetland restoration projects may be needed to minimize prevent inundation flooding of low-lying areas by the extreme high water level.</u></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 to prevent damage from sea level rise and storm activity flooding, that may occur structures on fill or near the shoreline over the expected life of a project. 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</u></p>	<p>Structures on fill or near the shoreline should be above the wave runup level or sufficiently set back from the edge of the shore so that the structure is not subject to dynamic wave energy. In all cases, the bottom floor level of structures should be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments specifically designed</p>

<u>needed to provide flood protection for existing</u>	to tolerate periodic flooding.
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Safety of Fills	
Policies	Staff Analysis
<p><u>projects. Except for priority use areas, 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 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. Within priority use areas, new projects on fill that cannot meet these design criteria may propose alternative measures to address future sea level rise and storm activity, including but not limited to other engineered solutions such as levees or seawalls. 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.</u></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. 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.</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</p>	<p>Staff proposes minor revisions to</p>

<p>language as follows:</p> <p>6. Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect <u>address</u> future relative sea level rise and should assure so that new structures and uses attracting people are not approved in <u>current or future</u> flood prone areas, or in areas that will become flood prone in the future; and that structures and uses that are <u>approved</u> approvable will be built at stable elevations and are properly designed to assure long-term protection from flood hazards <u>shoreline flooding</u>.</p>	<p>language for clarification and consistency with other sections</p>
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Protection of the Shoreline. The staff preliminarily recommends the Commission revise the findings and policies in the *Protection of the Shoreline* policy section as shown below.

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

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 explains that well designed shoreline protection provides protection against flooding and erosion.</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, breakwaters, levees, and seawalls, often require periodic maintenance and reconstruction.</u></p>	<p>The finding has been updated to reflect why shoreline protection is needed and that it requires periodic maintenance. The finding was re-lettered from a to b.</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</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. The finding was re-lettered</p>

<p>natural resources, such as water surface area and volume, tidal circulation, <u>and wildlife use. marshes, and mudflats.</u> <u>Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts.</u> Physical and visual public access can be provided on levees and other protection structures. <u>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>from b to c.</p>
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Protection of the Shoreline Protection	
Findings	Staff Analysis
<p>Add underlined language and delete struck-through language as follows:</p> <p>e. d. <u>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 is 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. The finding was re-lettered from c to d.</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>e. <u>f.</u> Nonstructural erosion control shoreline protection methods, such as tidal marshes marsh plantings, can provide effective flood control 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 <u>marsh habitat</u> restoration, enhancement or protection with structural approaches to <u>provide protection from</u></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> <p>Protecting existing habitats should be considered when designing shoreline protection. The finding was re-lettered from d to f.</p>

<p><u>flooding and control shoreline erosion, thereby minimizing the erosion control shoreline protection project's impact on natural resources.</u></p>	
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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 or release of pollutants. 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. The finding was re-lettered from e to g.</p>

Policies	Staff Analysis
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<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 <u>to protect existing or planned shoreline development or infrastructure from flooding or erosion</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) <u>the project is properly designed and constructed to prevent significant impediments to physical and visual public access</u>; and (e) <u>the protection is integrated with current or planned adjacent shoreline protection measures</u>. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes</p>	<p>The policy has been updated and expanded to reflect the potential need to provide protection for existing development 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.</p>
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should participate in the design.	
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Protection of the Shoreline Protection	
Policies	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 quarrystone or concrete pieces that have either been specially cast, <u>are free of extraneous materials from demolition debris</u>, and are 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. Whenever feasible and appropriate, shoreline protective <u>on</u> projects should include provisions for nonstructural methods such as marsh vegetation and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management. 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 establishing marsh and transitional upland vegetation as part of the protective structure, wherever feasible.</p>	<p>Staff proposes minor for clarification in response to comments.</p>
<p>Add underlined language as follows:</p>	<p>The new policy requires mitigation</p>

<p>5. <u>Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where such significant impacts cannot be avoided, mitigation or alternative public access should be provided.</u></p>	<p>and/or the provision of alternative public access when adverse impacts to natural resources and/or public access from shoreline protection are unavoidable.</p>
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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 relate to the proposed changes, especially those that the staff is not proposing to change, 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. The finding was re-lettered from h. to i.</p>
<p>Add underlined language and delete struck-through</p>	<p>The finding has been updated to recommend characterization of current</p>

<p>language as follows:</p> <p>k <u>l</u>. 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</p>	<p>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, or may change over time. The finding was re-lettered from k. to l.</p>
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Public Access	
Findings	Staff Analysis
<p>effects, if any, on wildlife depend on many factors, including physical site configuration, species present, and the nature of the human activity. Accurate characterization of <u>current and future</u> site, habitat and wildlife conditions, and of likely human activities, would provide information critical to understanding potential effects on wildlife.</p>	
<p>Add underlined language and delete struck-through language as follows:</p> <p>4 <u>m</u>. 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, and the likely human uses of the site, <u>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>
<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 <u>6</u>. 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</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, <u>where feasible</u>, is guaranteed for the life</p>

<p>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</p>	<p>of the project even if sea level rises.</p>
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<p>Public Access</p>	
<p>Findings</p>	<p>Staff Analysis</p>
<p>dedicated to the public as part of the subdivision process in cities and counties. <u>Depending on the nature and location of the development, this could include, among other things, requiring that Any public access provided as a condition of development should either be required to remains viable in the event of future sea level rise or flooding, or that equivalent access consistent with the project should be is provided nearby if land is available that can feasibly be developed and dedicated for public access.</u></p>	

Mayor Jeff Ira
Vice Mayor Alicia C. Aguirre
Council Members
Ian Bain
Rosanne S. Foust
Jeffrey Gee
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December 14, 2010

Commission Members
San Francisco Bay Conservation Development Commission
50 California Street, Suite 2600
San Francisco, CA 94111-4728

Re: Proposed Bay Plan Amendment

Dear Commission Members:

The City of Redwood City appreciates the opportunity to comment on the Bay Conservation and Development Commission's proposal to amend its Bay Plan (Bay Plan Amendment No. 1-08).

As a city with an extensive shoreline on San Francisco Bay, Redwood City is acutely aware of the risks posed by the anticipated rise in sea level due to climate changes resulting from greenhouse gas emissions. As the public agency with the primary responsibility for the health, safety and welfare of its residents, Redwood City appreciates the efforts of the Bay Conservation and Development Commission to research and assess the flood risks associated with rising sea level and its work towards developing mitigation and adaptation strategies that may be used to address such risks. The Commission's leadership in this regard is welcome and needed, given the regional scope of the risks and the shortage of local resources available to devote to these necessary and important tasks.

Redwood City also applauds the Commission's decision to extend the public hearing and outreach processes on this proposal. As the recent outpouring of public and local agency comments on its proposal demonstrates, the Commission's action may have significant and long-lasting effects on the planning and development efforts of numerous cities in the San Francisco Bay Area, including Redwood City. Mitigating the risks of flooding and effectively implementing strategies for adapting to higher sea level will require the support and cooperation of all the public agencies in the affected areas. Extending the public outreach and Plan amendment processes will allow the Commission to obtain vital input and guidance from all the affected agencies, and will help

ensure that the Commission's final amendments gain the necessary local support to successfully address the risks and effectively implement adaptation strategies.

During the Commission's public hearing on the Bay Plan amendment, it requested public input on the various approaches to its proposed amendment developed by the Commission's staff. Redwood City joins the numerous other commentators who expressed support for an approach that combines Option 4 and Option 6, as described in the Commission staff's reports for the November 18 and December 2 meetings. We understand this approach would use the amendments to clarify that the Bay Plan is intended to be used exclusively to guide the Commission in making regulatory decisions within its existing permit jurisdiction, and is not intended to be advisory for local governments. We look forward to reviewing the revised language as this process moves forward. We further understand that this approach would lead to the preparation of a broad, non-binding 'guidance document' by the Joint Powers Commission (consisting of the Commission, the Association of Bay Area Governments, the Bay Area Air Quality Management District, and the Metropolitan Transportation Commission) for use by public agencies and interested private parties on dealing with all of the potential effects of climate change, including but not limited to sea level rise.

This approach appears to be garnering broad public support, in large part because it would clarify the limits on the Commission's jurisdiction and would not expand the Commission's jurisdiction or its regulatory authority. Redwood City is among the many public agencies and interested parties that are troubled by the Commission's efforts to expand its jurisdiction or regulatory authority in a manner that could reduce or impair the land use and regulatory authority of the cities surrounding the Bay. Although the Commission has repeatedly insisted that the proposed Bay Plan amendments are not intended to expand its jurisdiction or regulatory authority, it has not adequately responded to questions regarding other Commission efforts to expand its regulatory authority, specifically, the "Sea Level Rise Legislation" proposal in the Commission's current strategic plan.

As described in the Commission's staff's December 2 report on the status of the strategic plan, the Sea Level Rise Legislation proposal involves drafting legislation to "empower, fund and direct the Commission to prepare a sea level rise adaptation strategy for the San Francisco Bay and the Suisun Marsh." This legislative initiative seems designed to expand the Commission's limited regulatory authority, which it characterized in its April 2009 report on rising sea level as "a significant governance vulnerability because it prevents the Commission from ensuring that development on the shoreline is sited and designed to avoid or minimize impacts from future flooding." Chapter 4 of that report (Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline) purports to identify "vulnerabilities in Bay Area governance systems" that may hinder the region's ability to meet the challenges of rising sea level, and concludes that the existing limits on the Commission's regulatory authority will prevent the Commission and the region from effectively

planning for and adapting to climate change impacts. This conclusion is incorrect, because it is based on numerous flawed or incorrect assumptions, as described below;

For example, the report assumes that city governments “lack incentives to change shoreline development patterns” in a manner that would adequately or effectively address flood risks from rising sea levels. This is plainly incorrect. As noted above, city governments are vested with primary responsibility for the health, safety and welfare of Bay Area residents, and city decision makers are directly accountable to their residents through the electoral process. By contrast, the Commission’s mandate is to protect the Bay, not the people living near the Bay, and it is not directly accountable to the local residents who will be most affected by permitting and regulatory decisions. The responsibility of city governments to protect the health and safety of their residents, and their direct accountability to the residents who are at risk from sea level rise, provide ample incentives to ensure safe and responsible development of shoreline areas— incentives that do not directly apply to the Commission’s decision making processes.

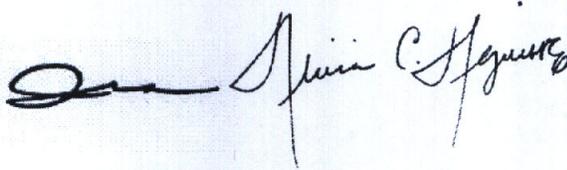
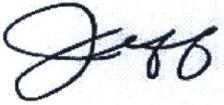
The Commission’s claim that its limited regulatory authority is “a significant governance vulnerability because it prevents the Commission from ensuring that development on the shoreline is sited and designed to avoid or minimize impacts from future flooding” appears to assume that cities are not capable of ensuring the same result. Again, this is plainly incorrect. City governments are accustomed to and regularly consider the potential flooding impacts from new development, including flooding from rising sea level, as part of the environmental review process required by the California Environmental Quality Act (CEQA). There is simply no legitimate reason to assume that cities cannot or will not bring the science and information developed and compiled by the Commission to bear on shoreline development decisions—this is precisely the purpose of the CEQA process.

Contrary to the Commission’s apparent assumptions, the existing CEQA process provides an adequate framework and process for evaluating and minimizing climate change risks, and recognizes the important roles played by the Commission and local governments. As noted above, the Commission plays a crucial role by compiling and developing the information and data needed to adequately assess the flood risks from rising sea level. CEQA requires all local government agencies to consider the best available science and data on the potential environmental effects of proposed projects, including the flooding effects from rising sea level, as well as all feasible alternatives and mitigation measures that would mitigate such effects. The Commission’s laudable effort to develop and assemble the best available science and data on the risks of sea level rise in the Bay Area plays a vital role in this process. And Redwood City welcomes the Commission’s comments and participation in Redwood City’s consideration of development proposals for shoreline areas, and other areas that

may be affected by rising sea level, throughout Redwood City. Redwood City is committed to using the information assembled and provided by the Commission to "ensure that development on the shoreline is sited and designed to avoid or minimize impacts from future flooding." The Commission has not identified any reasonable basis for shifting land use regulatory authority and decision-making away from the local governments to a regional agency like the Commission.

In sum, it is neither necessary nor appropriate for the Commission to seek to expand its jurisdiction and regulatory authority in a manner that would impair or intrude upon the local land use and regulatory authorities of cities that might be affected by rising sea level. The current land use and environmental statutes and regulations reflect a considered allocation of responsibilities and obligations, and provide the Commission and the region's local governments with all the necessary tools to address the flood risks associated with sea level rise. Consequently, the Commission should resist the urge to expand its regulatory authority at the expense of the local governments who are best situated to weigh the risks and benefits of local development proposals.

Sincerely,



Jeff Ira
Mayor

Alicia Aquirre
Vice Mayor



Robert B. Bell
Interim City Manager

cc: Members of the City Council of Redwood City



CITIZENS COMMITTEE TO COMPLETE THE REFUGE

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17 December 2010

Re: December 10, 2010 Staff Report on Policy Alternatives for Bay Plan Amendment No. 1-08
Concerning Climate Change

Dear Mr. LaClair,

Thank you for the opportunity to provide comments regarding the proposed climate change amendments to the Bay Plan – again. We support (for the most part) the proposed amendments and urge BCDC to adopt the amendments – soon. We fear the glacial pace of this process will soon be outstripped by on-the-ground ramifications of sea level rise. To quote the 2009 California Climate Change Adaptation Strategy (CAS) (<http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF>), “Climate change is already affecting California.” Sea levels have risen as much as seven inches along the California coast over the last century, increasing erosion and pressure on the state’s infrastructure, water supplies, and natural resources.” And “If the state *were to take no action* to reduce or minimize expected impacts from future climate change, *the costs could be severe.*” [emphasis added] Lastly, “All state agencies responsible for the management and regulation of public health, infrastructure or habitat subject to climate change should prepare as appropriate agency-specific adaptation plans, guidance or criteria *by September 2010.*” [emphasis added]. It is incumbent upon BCDC to adopt a sea-level rise adaptation strategy to ensure the long-term sustainability of our communities and to preserve and protect the biodiversity of our bay ecosystems.

Staff is well aware of the extent of BCDC’s legal authority and the amendments that have been proposed are consistent with BCDC’s mandate under the McAteer-Petris Act, existing Bay Plan policies, the Federal Coastal Zone Management Act, and the afore-mentioned CAS.

The CAS provided specific recommendations/strategies:

- *use the best available science* to identify risks resulting from climate change as well as adaptation strategies,
- consider project alternatives that avoid significant new development in areas that cannot be adequately protected from adverse effects (e.g. flooding, erosion, wildfires, etc.) due to climate change
- state agencies should generally *not plan, develop, or build any new significant structure* in a place where that structure will require significant protection from sea level rise, storm surges, or

coastal erosion during the life of the structure...state agencies should incorporate this policy into their decisions and other levels of government also encouraged to do so.

- pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related habitats; managing sediment for marsh accretion and natural flood protection, and maintaining upland buffer areas around tidal wetlands.
- prohibit projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones.

BPA 1-08 must be consistent with existing State guidance including the recommendations and strategies outlined in the California Climate Change Adaptation Strategy.

Comments re Policy 1 alternatives:

The policy direction in language must be retained and is consistent with the guidance provided in the CAS. It is crucial that any risk assessment include consideration of future sea level rise when analyzing 100-year flood elevations. The range of sea level rise projections should not only include at least one high estimate, the entire range must reflect elevations based upon up-to-date sea level rise predictions that reflect the best science available at the time of the assessment.

Comments re alternatives for Policy 5:

The policy direction in language must be retained with the following modifications. We concur with the statements submitted by the California Coastkeeper Alliance (CCKA) in their October 6, 2010 letter that BPA 1-08 disproportionately focuses on “infill” development and that the emphasis along with a failure to carefully define what constitutes infill” could undermine the intent and spirit of the proposed climate change amendments. We ask that as suggested by CCKA, BCDC “revisit and reevaluate all references in BPA Amendment 1-08 to infill development to determine whether they are necessary to meet the overarching climate adaptation goals of the amendments.”

Additionally, the use of the term “infill” must be consistent with existing State guidance and law. The CEQA Guidelines at §15192 (Thresholds requirements for exemptions for agricultural housing, affordable housing, and residential infill projects) introduces environmental restrictions on what can be considered an “infill” project, specifically, that the project site:

- (1) Does not contain wetlands, as defined in Section 328.3 of Title 33 of the Code of Federal Regulations.
- (2) Does not have any value as an ecological community upon which wild animals, birds, plants, fish, amphibians, and invertebrates depend for their conservation and protection.
- (3) Does not harm any species protected by the federal Endangered Species Act of 1973 (16 U.S.C. Sec. 1531 et seq) or by the Native Plant Protection Act (Chapter 10 (commencing with Section 1900) of Division 2 of the Fish and Game Code), the California Endangered Species Act (Chapter 1.5 (commencing with Section 2050) of Division 3 of the Fish and Game Code).
- (4) Does not cause the destruction or removal of any species protected by a local ordinance in effect at the time the application for the project was deemed complete.

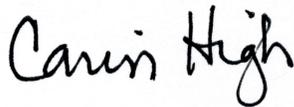
Incorporation of existing State guidance on what constitutes “infill” is not only consistent with but also promotes the CAS goals and strategies of to protect biodiversity and pursuit of activities that “increase natural resiliency.”

Comments re alternatives to Policy 6:

The policy direction in the language should be retained with modifications. Item (c) – The use of the term “infill” must be restricted as described above. Also, who determines what “high value” means? Is this economic value to the developer or the local agency? That type of value analysis does not always take into consideration the long-term burden new development will place on communities. Item (d) – the term “redevelopment” as it pertains to development projects should be restricted to sites that are in urban areas and predominantly covered by existing hardscape. Also, areas in need of redevelopment could potentially provide opportunities for natural resource restoration.

As the California Coastkeeper Alliance stated in its October 6, 2010 letter (and Baykeeper stated in its October 7, 2010 letter), “BCDC’s amendment of the Bay Plan to address sea level rise is a reasonable exercise of its legal duties and responsibilities.” We thank staff for many opportunities to provide comment. We urge BCDC to quickly adopt staff’s recommended climate change amendments as modified above.

Sincerely,

A handwritten signature in black ink that reads "Carin High". The signature is written in a cursive, slightly slanted style.

Carin High,
Vice-Chair

Wayne W. Miller
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December 16, 2010

Joe LaClair (joel@bcdca.gov)
San Francisco Bay Conservation and Development Commission
50 California St., Suite 2600
San Francisco, CA 94111

RE: Bay Plan Amendment 1-08 on Climate Change

Dear Mr. Chairman and Commissioners

As a researcher in climate change and a prior student in graduate studies on chemical and physical oceanography, I urge you to recommend that the Commission amend the current staff draft of Bay Plan Findings and Policies on Climate Change to state clearly that new development in **undeveloped shoreline areas vulnerable to sea level rise should not be permitted**. The amendment also provides an essential step to encourage habitat preservation and restoration, including acquisition where necessary to ensure protection.

OVERVIEW

Per the staff's December 10, 2010 memo, we strongly recommend:
Policy #1 – Risk Assessments: The basic policy direction in the language should be retained – the State of California has provided guidance on the science—but should be updated and be based on more current sea level rise estimates for planning and risk assessment.

In addition, jurisdiction and guidance should be defined to include both the regional and local level. Cities, as part of local developments, also make up regional areas and cannot be excluded from regional by definition, because those environments are all related and affect one another. City developments affect regional plans and vice versa, and all must be evaluated scientifically and universally, considering the scale of global climate disruption and sea level rise.

Without jurisdiction and guidance at a local level, control at a regional level can be undermined if cities have the freedom and opportunity to create what is selectively best for them for short-term benefits, despite the impact of surrounding climate change and sea level rise. In turn, cities will transfer any needed future protections to regional measures, and the taxpayers (all citizens) will pay. City administrators and politicians have admitted that “it is not their problem, that it is regional”, and they deceptively argued the issues verbally in council and planning commission meetings.

The California Climate Adaptation Strategy (CAS) articulates principles to guide local agencies crafting sea level rise adaptation policies. Many of the strategies are best practices of coastal planning that have become necessary in light of projected sea level rise. Therefore, to reiterate:

1. Restrict new development in hazard zones and evaluate existing vulnerable developments for removal. The top priority strategy identified in the CAS to protect coastal and ocean resources is “to avoid establishing or permitting new development inside future hazard zones in most cases, if new protective structures would be necessary.”
2. Protect and buffer critical habitats. Restoring tidal wetlands, eelgrass beds, oyster beds and other natural coastal ecosystems both creates aquatic habitats for threatened species and establishes a natural buffer against extreme weather.
3. Prioritize adaptation strategies that enhance an ecosystem’s natural adaptive capacity. Creating buffers of open space around beaches and wetland areas is a “no-regrets” sea level rise adaptation strategy that both increases the amount and diversity of estuarine habitats and enhances an ecosystem’s natural adaptive capacity by allowing beaches and wetlands to migrate inland as the sea level rises.
4. Discourage the use of structural protective barriers such as **sea walls**. Sea walls, as well as parking lots, roads, and rails, erode adjacent beaches and coastal areas and prevent the natural migration of wetlands and beaches and reduce the amount of sandy beach, salt marshes, and other habitats.

[The definitions of **protective devices** and **armoring**, as described in your adaptation strategy should also include excessive **landfills** used to temporarily extend the life of a project in vulnerable areas, which only delays the impact of sea level rise, storm surge and flooding. Include **levees that are** used in order to delay impact, as low land developments in vulnerable areas may eventually experience the upsurge of hydrologic water pressure from sea water intrusion and upland drainage of saturated soil. Include armoring with **sea walls** that

would be needed for protection, which should eliminate newer developments and infill in existing developments. **Vulnerable areas** are those that would eliminate **new developments**, as well as **infill in existing developments**].

5. Coastal resilience is the overriding goal of adaptation strategies (instead of aiming only to reduce vulnerability). A resilient ecosystem is measured by “the capacity of a system to absorb and utilize or even benefit from perturbations and changes that attain it, and so persist without a qualitative change in the system’s structure”.

MY PREVIOUS SUBMITTED COMMENTS

In a previous email to BCDC staff, which you received and published as a public comment, I stated "as a scientist and having performed research as a graduate student of oceanographic studies, I am submitting the following comments to BCDC's Bay Plan Amendment 1-08. The 11-page Word file included some peer-reviewed scientific articles that should inspire reevaluation of policies affecting vulnerable lands impacted by climate change/disruption and sea level rise". Please consider those comments.

ADDITIONAL COMMENTS, SOME OF WHICH I PRESENTED VERBALLY AT THE DEC. 2 BCDC MEETING

1. “I live in Newark, CA, close to the impact of sea level rise”.
2. Sea level rise projections are mostly out of date, according to the 11-page report I sent previously to BCDC. My references and more current publications support this, although my report is limiting, and it does not include hundreds of other international references, too numerous to cite. More references are to come forth.
3. In prior meetings that I attended, I was most surprised and concerned about the conflicts of interest, where I find that members of city staff (some even on the Commission) were present. We know that certain, if not most city staff, are influencing city agenda to force developments in vulnerable areas closer to the Bay. I noticed that much of the testimony and the letters from many attendees were to undermine and degrade the Adaptation Plan in order to promote private agenda, with little concern about the impact of the future. All of this is driven by short-term monetary benefits. Thanks to all the individuals and groups who stood up to protect the Bay!

4. As stated in my previous report, we should be proactive and not place new developments close to the Bay in vulnerable areas such as hazard zones, which will also require protection and armoring and likely will eventually fail. "Protection and armoring" should include definitions such as excessive landfill that is used to raise developments above sea level, leaving surrounding lands more vulnerable to hydrologic forces. Levees also should be considered as protective devices, which may not have suitable substrates to protect against rising ocean, corrosive changes in ocean chemistry (salt-acidity) and sea water infiltration within and below the levees. Concrete and similar armoring structures also will be vulnerable to changing chemical and physical properties of ocean environments.

5. Costs of protection and armoring existing developments are enough to warrant the elimination of new developments in vulnerable areas that are closer to the Bay. As in the Adaptation Strategy, we should not develop in these vulnerable areas. We should promote restoration for flood protection and habitat development, and avoid protections and armoring as the short-term alternative.

If new structures are built closer to sea level, what and who will plan, provide and pay for long-term maintenance, especially if sea level rise and other climate disruption mechanisms accelerate, which is the current trend, as other forces of nature are continually coming into play? And what is the real life of a project, only 20 years, unlike other developments, all over the world, which have been around much longer? And what happens when the life of the project has ended--everyone moves to higher ground, somewhere?

6. The **IPCC** projections for sea level rise are already out of date. There are hundreds and even thousands of peer-reviewed publications supporting much more catastrophic impacts of ocean and bay environments, since we are not even beginning to do enough to mitigate our influence. Last year the United Nations Program on Climate Change published many scientific statements, over and over, that claim that "**what we thought will happen in the future is already happening**", due to accelerated changes. Up to this date and in the future, more overwhelming evidence is to come pouring into press with more catastrophic warnings, as populations continue to be unchecked, to expand and grow, while resources such as arable land, food, water, fuel and other commodities continue on the downward trend.

The recent Union of Concerned Scientist publication on the outcome of the **IPCC meeting in Cancun** stated that the "collective actions of countries is **insufficient** to meet the challenges of climate change, primarily due to the **lack of action** at home in the United States". Consequently, a proactive plan of action of the

BCDC of California can be utilized as an **example** to us and to others if implemented with conviction, not just for guidance but with forceful jurisdiction, based on sound science, as short-term monetary gain of developments in vulnerable areas will only serve to undermine our commitments further, at a local, city, county, state, national and international level.

OCEAN CHEMISTRY, ACIDIFICATION AND CORROSIVES

We are only beginning to understand the impact of the chemistry and physics of ocean environments on carbon dioxide, methane and other chemistries that we know can influence rapid and exponential changes to ocean environments. History has demonstrated this.

Recently the two most important conditions that we are just beginning to address, and are closely connected, are **climate disruption and ocean acidification** from increased carbon dioxide concentrations in the atmosphere and in the sea. Reports on methane release from permafrost melting indicate that it will have a much more profound effect on climate change. In addition, methane can oxidize to carbon dioxide and continue its impact. (In the Dec. 2 meeting, ocean acidification was briefly addressed by a BCDC representative as another compounding issue).

1. Effects on Biological Life

Increased carbon dioxide in the atmosphere and oceans is shifting the pH of the oceans to a more acidic condition and is affecting the delicate carbonate-bicarbonate equilibrium in the oceans. These effects on all ocean organisms, plant and animal, is evident. Loss of argonites, or carbonate deposition, is increasing with only a slight change in acidity. The change in acidity is expected to become much worse, as climate disruption and carbon dioxide increases, leading to catastrophic changes in land and sea.

2. Chemical effects on the Environment

We are only beginning to observe the effect of ocean acidification on alkaline earth complexes of calcium and magnesium, which binds shells, bones, teeth and other biological processes for the evolution and survival of most if not all organisms. Over millions of years, alkaline clay sediments, which also contain calcium complexes will be affected by increasing ocean acidity and other corrosive forces. These complexes can be degraded in acidic environments, easily demonstrated in the laboratory.

As ocean environments become more acidic, we can demonstrate the corrosive effects on sediments, landfills, levees, clay liners, even concrete structures that typically contain alkaline earth complexes such as calcium and magnesium complexes. As the buffering capacity of ocean and bay environments are weakened and become more acidic, other naturally occurring ionic species can also become more corrosive and can accelerate degradation of both inorganic substances and organic life. This condition further demonstrates that we have hardly taken into account what impact changing ocean chemistry will have on our proposed protective devices and armoring. The rest of the world will experience the same impacts. These forces and many others will come into play as our climate impacts both terrestrial and ocean environments.

As an example for reference, the College of Marine Science in Delaware has published a number of papers on changing ocean chemistry—with more to be published on the impact of these chemistries.

Consequently, we need to continue to further evaluate and implement scientific reasoning from research that is uncovering so many other changing properties of our terrestrial, ocean and bay environments, when considering developments close to the Bay. BCDC can take the opportunity to be proactive, to set an example and a precedent to the Bay—and to the world—as to what we can attain to meet the challenge of climate disruption and sea level rise. The world is watching—with hope and great expectations.

Sincerely,

Wayne W. Miller

Please confirm receipt of this file and attachment.

Analysis and proposed revisions to Sept. 3, 2010 version of proposed Bay Plan amendments on climate change

Guide to Markup:

Normal text = existing Bay Plan language

Underlined text = proposed additions to Bay Plan by BCDC, Sept. 3, 2010 version

~~Strikethrough text~~ = proposed deletions from the Bay Plan by BCDC, Sept. 3, 2010 version

Italics text = proposed Coalition additions to the Sept. 3, 2010 version

~~Double-strikethrough text~~ = proposed Coalition deletions from the Sept. 3, 2010 version

Y= Coalition proposed change to section text

N= Coalition has not proposed change to section text

Findings	Coalition Change?		
Tidal Marshes and Tidal Flats			
<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. <u>These recommendations were based on conditions of tidal inundation, salinity, and sedimentation of 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 targets for types, amounts and distribution of habitats.</u></p>	N		

<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>N</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. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. 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>N</p>		
<p>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 <u>observed</u> that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in the volume of sediment entering the Bay annually 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 may also accelerate, thus potentially exacerbating shoreline erosion and adversely affecting the <u>ecosystem and the sustainability of future wetland ecosystem restoration projects.</u> <u>An adequate supply of sediment is necessary to ensure resilience of the Bay ecosystem as sea level rise accelerates.</u></p>	<p>N</p>		
<p>m. <u>Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. 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 for wetlands.</u></p>	<p>N</p>		

<p><u>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 tidal habitats 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 targets. (Proposed Amendments, pg. 5, para. n.)</u></p>	<p>N</p>		
<p><u>l. o. [renumbered but no proposed changes] (Proposed Amendments, pg. 7, para. o.)</u></p>	<p>n/a</p>		
<p><u>m. p. [renumbered but no proposed changes] (Proposed Amendments, pg. 6, para. p.)</u></p>	<p>n/a</p>		
<p>Policies 1 through 3 – no changes</p>	<p>n/a</p>		
<p><u>4. Where and whenever possible feasible, former tidal marshes and tidal flats that have been diked from the Bay should be considered for restoration 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. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management 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. <i>Subject to existing Bay Plan policies,</i> the public should make every reasonable <i>the public should make every reasonable</i> efforts to acquire these lands from willing sellers for the purpose of habitat restoration <u>and wetland migration.</u> (Proposed Amendments, pp.6- 7, para. 4.)</u></p>	<p>Y</p>		
<p><u>5. The commission should support comprehensive Bay sediment research and monitoring to understand sediment processes necessary to sustain and restore wetlands. Monitoring methods should be updated periodically based on current scientific information. (Proposed Amendments, pg. 7, para. 5.)</u></p>	<p>N</p>		

<p>5-6. Any ecosystem 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 relative <u>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 control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; (h) <u>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 effective <u>adaptive</u> measures should be taken.</p>	N		
<p>Climate Change – Findings</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." Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate.</u> (Proposed Amendments, pg. 8, para. a.)</p>	N		
<p>b. <u>The future extent of global warming is uncertain. It will be driven largely by future greenhouse gas emission levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. These emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes.</u> (Proposed Amendments, pg. 8, para. b.)</p>	N		

<p><u>c. Global surface temperature increase are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emission scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of the century. Although these are currently the best science-based sea level rise projections for California, recent observations of global greenhouse gas emission show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. Sea level rise projections will change over time. Therefore, to minimize For purposes of analysis of future flood risk, it is prudent to rely on a range higher projections in the range of possible future sea level rise scenarios recognized as scientific consensus at the time of the analysis.</u></p>	<p>Y</p>		
<p><u>d. Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Nino events, which generally result in persistent low air pressure, greater rainfall, high winds and higher sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.</u></p>	<p>N</p>		

<p><u>e. Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies such as the National Oceanic and Atmospheric Agency, the Federal Emergency Management agency, the United States Army Corps of Engineers, cities, counties, and flood control districts, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using a range of scientifically based higher emission scenarios, including projections which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude thoroughly analyze new development to determine whether it can that cannot be adapted to sea level rise.</u></p>	<p>Y</p>		
<p><u>f. Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies. Assessments of proposed projects in areas subject to inundation by the appropriate jurisdictional entity should consider principles of resilience, adaptive capacity, and risk in evaluating the project.</u></p>	<p>Y</p>		

<p><u>g. In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions can include relocating structures out of flood and inundation zones, protecting shorelines, promoting appropriate infill development, and 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. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems.</u></p>	<p>Y</p>		
<p><u>h. In the context of sea level rise adaptation, innovative approaches will likely include financing mechanisms, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks; maximize compatibility with and integration of natural processes; are resilient over a range of sea level, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale. (Proposed Amendments, pg. 10, para. h.)</u></p>	<p>N</p>		
<p><u>i. 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. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management actions, and integrating this information into future actions. (Proposed Amendments, pg. 11, para. i.)</u></p>	<p>N</p>		
<p><u>j. The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity. (Proposed Amendments, pg. 11, para. j.)</u></p>	<p>N</p>		

<p><u>k. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, are potentially 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A current lack of funding to address projected impacts from sea level rise necessitates a collaborate approach with all stakeholder groups to find strategic and innovate solutions to realize will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</u></p>	Y		
<p><u>l. Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost. (Proposed Amendments, pg. 12, para. l.)</u></p>	N		
<p><u>m. 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. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species including endangered species. The Bay 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 ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or 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 wetland will increase the risk of shoreline flooding. (Proposed Amendments, pg. 12, para. m.)</u></p>	N		
<p><u>n. Some Bay Area residents, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities. (Proposed Amendments, pg. 12, para. n.)</u></p>	None.		

<p><u>o. Approaches for ensuring public safety in developed vulnerable shoreline areas through adaptive management strategies include but are not limited to: (1) protecting existing and planned appropriate infill development; (2) accommodating flooding by building structures or infrastructure systems that are resilient or adaptable over time; (3) discouraging permanent new development when adaptive management strategies cannot protect public safety; (4) allowing only interim new uses that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) over time and where feasible and appropriate, removing existing development where public safety cannot otherwise be ensured.</u></p>	<p>Y</p>		
<p><u>p. Infill development is building homes, businesses and/or public facilities and infrastructure on vacant, underutilized and/or environmentally degraded lands within existing urban areas that are served by existing or planned transit and transportation infrastructure. Infill development includes the conversion of former military bases and adjacent property to job-producing or other productive uses and the adaptive reuse of existing structures. Infill development has been identified in state law as an important strategy for reducing greenhouse gas emissions. To further this policy objective, the Association of Bay Area Governments and the Metropolitan Transportation Commission initiative the FOCUS program to develop a regional development strategy that promotes a more compact Bay Area land use pattern. In consultation with local governments, the FOCUS program identified priority development areas for infill development in the Bay Area. These priority development areas are anticipated to be key components of the Bay Area's Sustainable Communities Strategy that will be adopted and periodically updated pursuant to SB 375. One of the Commission's objectives in adopting these sea level rise strategies and recommendations is to facilitate implementation of the Sustainable Communities Strategy. the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an areas where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit. Infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities that can be served by transit. Some vulnerable shoreline areas are already improved with development that has regionally significant economic, cultural or social value, and can accommodate infill development.</u></p>	<p>Y</p>		

<p>g. When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.</p>	Y		
<p>r. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict, <i>local agencies may employ methods including but not limited to: clustering infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; formulating an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; and incorporating measures can be incorporated that will enhance project achieve resilience and sustainability in all elements of the project.</i> Local governments can augment such infill or redevelopment strategies in low-lying areas with and a permanent project-based financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future and/or a public financing strategy, as appropriate, to fund future flood protection for the project, which may also include existing nearby development.</p>	Y		
<p>s. Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain critical habitat or provide opportunities for habitat enhancement. Allowing <i>Proposals for development in these areas w should preclude important be evaluated to assess their potential for habitat enhancement opportunities, their potential to address the region's needs for appropriate infill development, regional benefits, and greenhouse gas reduction. Some developed areas may be suitable for ecosystem restoration if existing development is removed to allow the Bay migrate [sic] inland, although relocating communities is very costly and may result in the displacement of neighborhoods.</i> (Proposed Amendments, pg. 14, para. s.)</p>	Y		

<p>t. <u>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 with local governments, including agencies with responsibility for flood protection, is necessary to optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty.</u></p>	<p>Y</p>		
<p>u. <u>Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission will work through the Joint Policy Committee to harmonize Bay Plan Climate Change policies with the emerging SCS and update Bay Plan Policies if necessary to ensure that appropriate infill projects are encouraged.</u></p>	<p>Y</p>		

<p><u>v. 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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation. ,</u></p> <p><i>Accordingly, the Commission intends, and hereby declares, that any finding, part, section, policy, or other language of the Bay Plan that is amended by _____ is purely advisory and not an enforceable policy or otherwise legally applicable in any manner, or for any purpose, including but not limited to, the Coastal Zone Management Act and the California Environmental Quality Act, with respect to any project or activity that occurs outside the Commission's formal jurisdiction as defined in the Act.</i></p> <p><i>For projects or activities within the Commission's formal jurisdiction that require a permit from the Commission, it is important to provide certainty to projects or activities that are either underway or have advanced significantly in the planning and approval process. Any project or activity for which an application for a Commission permit is deemed complete before _____, shall be subject to the Bay Plan policies in effect as of _____.</i></p>	<p>Y</p>		
<p>Climate Change – Policies</p>			
<p><u>1. When planning shoreline areas or designing larger shoreline projects, local agencies should undertake and may prepare a risk assessment should be prepared, based on the estimated 100-year flood elevations that take the currently available best estimates of future sea level rise and current or planned flood protection into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best scientific data science-based projections currently available, should be used in the risk assessment. Inundation maps should be prepared under the direction of a coastal engineer.</u></p>	<p>Y</p>		

<p><u>2. To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects – other than minor repairs to existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place – should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project by a qualified engineer. If it is likely the project will remain in place longer than mid-century, and adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	<p>Y</p>		
<p><u>3. To the extent feasible, undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be evaluated relative to their potential to address competing concerns via infill development, regional benefits, potential for habitat enhancement opportunities, and greenhouse gas reduction preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change. (Proposed Amendments, pg. 15, para. 3.)</u></p>	<p>Y</p>		
<p><u>4. Whenever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	<p>N</p>		

<p><u>5. 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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.</u></p> <p><u>The strategy should incorporate an adaptive management approach, be consistent with the SCS adopted and updated pursuant to SB 375, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared under the direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection. Particular attention should be given to identifying and encouraging the development of long-term regional flood protection strategies that may be beyond the fiscal resources of individual local governments</u></p> <p><u>The regional strategy should determine where and how existing development should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.</u></p> <p>The goals of the strategy should be to <u>The entities that formulate the regional strategy are encouraged to consider the following strategies and goals:</u></p>	<p>Y</p>		
<p><u>a. advance regional public safety and economic prosperity by protecting most existing and appropriately planned shoreline development especially development that provides regionally significant benefits, and by protecting infrastructure that is crucial to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, major parks, recreational areas and trails;</u></p>	<p>Y</p>		

<p><u>b. enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;</u></p>	<p>N</p>		
<p><u>c. integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p>	<p>N</p>		
<p><u>d. encourage innovative approaches to sea level rise adaptation;</u></p>	<p>N</p>		
<p><u>e. Identify a framework for integrating the adaptation responses of multiple government agencies;</u></p>	<p>N</p>		
<p><u>f. integrate regional mitigation measures designed to reduce greenhouse gas emission with regional adaptation measures designed to address the unavoidable impacts of climate change;</u></p>	<p>N</p>		
<p><u>g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u></p>	<p>N</p>		
<p><u>h. address any existing contamination and the implications of the contamination on water quality;</u></p>	<p>N</p>		
<p><u>i. support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u></p>	<p>N</p>		
<p><u>j. identify actions to prepare and implement the strategy, including any needed changes in law; and</u></p>	<p>N</p>		
<p><u>k. identify mechanism to provide information, tools, and financial resources so local government can integrate regional climate change adaptation planning into local community design processes.</u></p>	<p>N</p>		

<p>6. <u>Until a regional sea level rise adaptation strategy can be completed and local adaptive management standards are developed, local governments, together with the Commission as to its areas of jurisdiction, should evaluate new development projects in areas vulnerable to future shoreline flooding on a case-by-case basis to determine resilience and adaptability. Emphasis should be placed on the following project characteristics when planning or regulating new development in areas vulnerable to future shoreline flooding new projects should be limited to:</u></p>	Y		
<p><u>a. minor repairs of existing facilities or small projects that do not increase risks to public safety;</u></p>	N		
<p><u>b. transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p>	N		
<p><u>c. Development or redevelopment that provides significant regional benefits and meets regional goals, or <u>infill development</u> that includes the following elements: (i) an adaptation strategy for dealing with sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures that will enhance project resilience and sustainability; (iii) a financial strategy that addresses the potential cost of protecting the project from any storm damage due to sea level rise in the future. :(1) within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u></p>	Y		

<p><u>d. redevelopment that will remediate existing environmental degradation or contamination particularly on closed military bases, or if the redevelopment that will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding 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 sustainability in all elements of throughout the project; (iii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; or</u> (Proposed Amendments, pg. 18, para. 6, subd. d.)</p>	Y		
<p><u>e. projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require additional shoreline protection during the life of the project beyond those flood mitigation strategies that are proposed as part of the project.</u></p>	N		
<p><u>f. public parks, natural resource restoration or environmental enhancement projects;</u></p>	N		
<p><u>7. To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.</u></p>	N		
<p></p>			
<p>Safety of Fills -- Findings</p>			
<p></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</u> 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 <u>Other approaches that can reduce flood damage include protecting structures or areas with levees, of an adequate height seawalls, tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time.</u> (Proposed Amendments, pg. 19, para. f.)</p>	<p>None.</p>		
<p>g. Bay waer 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 and 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 peaks. Sea level is rising at an accelerated rate due to global climate change. 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. 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. 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 around seven feet since 1912) could subside up to seven feet more; if this <u>Where subsidence occurs, more extensive</u></p>	<p>None.</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 and 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 peaks. <u>Sea level is rising at an accelerated rate due to global climate 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 around 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 may be needed to minimize prevent inundation flooding</u> of low-lying areas by the extreme high water level. (Proposed Amendments, pp. 19-20, para. g.)</p>	None.		
<p>Safety of Fills – Policies</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.</p>	N		

<p>5. 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.</p>	<p>N</p>		
<p>6. Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect <u>address</u> future relative sea level rise and should assure <u>so</u> that new structures and uses attracting people are not approved in <u>current or future</u> flood prone areas, or in areas that will become flood prone in the future; and that structures and uses that are <u>approved</u> approvable will be built at stable elevations to assure long-term protection from flood hazards <u>shoreline flooding</u>.</p>	<p>N</p>		
<p><u>Protection of the Shoreline Protection – Findings</u></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>N</p>		
<p>a- b. <u>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 <u>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> Structural shoreline protection, suach as riprap, levees, and seawalls, often requires <u>periodic maintenance and reconstruction.</u></p>	<p>N</p>		

<p>b. c. Most erosion control <u>structural shoreline protection</u> projects involve some fill which can adversely affect natural resources such as water surface area and volume, tidal circulation, <u>and wildlife use, marshes, and mudflats.</u> <u>Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts.</u> Physical and visual public access can be provided on levees and other protection structures. <u>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>	N		
<p>e. d. Structural shoreline protection structures, such as riprap and sea walls, are 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 of and the 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>	N		
<p>e. Addressing the impacts of sea level rise and shoreline flooding may <u>requires 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>	N		
<p>d. f. Nonstructural erosion control shoreline protection methods, such as tidal marshes marsh plantings, can provide effective flood control but are typically effective for erosion control only in areas experiencing mild erosion. However, in some instances, it may be possible to combine <u>marsh habitat restoration with structural approaches to provide protection from flooding and control shoreline erosion, thereby minimizing the erosion control shoreline protection project's impact on natural resources.</u></p>	Y		

<p>e- <u>g.</u> 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>	N		
<p>Protection of the Shoreline Protection – Policies</p>			
<p>1. New shoreline erosion control protection projects and the maintenance or reconstruction of existing erosion control facilities projects should be authorized if: (a) the project is necessary to protect <u>existing or appropriately planned</u> the shoreline <u>development from flooding or erosion</u>; (b) the type of the protective structure is appropriate for the project site, <u>the uses to be protected</u>, 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 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) <u>the protection is integrated with current or planned adjacent shoreline protection measures</u>. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion control projects.</p>	Y		
<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 quarrystone or concrete pieces that have either been specially cast, <u>are free of extraneous materials from demolition debris</u>, and are 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>	N		

<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>	N		
<p>4. Shoreline protective ion 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 ion projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.</p>	N		
<p>5. <u>Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where such significant impacts cannot be avoided, mitigation or alternative public access should be provided.</u></p>	N		
<p>Public Access -- Findings</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>	N		
<p>h. i. <u>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. 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>	N		

<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. Accurate characterization of <u>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>N</p>		
<p>l- 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 and the likely human uses of the site, <u>and the potential impacts of future sea level rise climate change.</u></p>	<p>N</p>		
<p>Public Access – Policies</p>			
<p><u>5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.</u></p>	<p>N</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.</p>	<p>N</p>		

From: JLucas1099@aol.com

To: joel@bcdcc.ca.gov

Sent: Fri, 17 Dec 2010 16:46:35 -0800

Subject: Comment on Policy Alternatives Bay Plan Amendment No.1-08 Concern Climate Change

Dear Joe LaClair,

Dec/ 17, 2010

One more belated comment on Policy Alternatives for Bay Plan Amendment No. 1-08 Concerning Climate Change and on Item # 9 of BCDC's December 16 Commission Agenda, please give higher priority to all feasible opportunities for restoration of the fisheries of San Francisco Bay.

This could extend to BCDC's permitting of bay development with mitigation measures to improve adjacent marsh and riverine habitat, and sub-tidal habitat, as well as water quality, and bay tidal circulation.

There is no reason why with more than double historic amounts of water available in Bay Area watersheds, due to imports, that native fisheries of steelhead and salmon are not thriving, particularly in the South Bay.

The collapse of these fisheries seems unaccountable and can only be the result of poor management of reservoir releases and thoughtless misapplication of precious Sierra water supplies.

It would be highly commendable if BCDC can raise the consciousness of every community and industry in the Bay Area that it is everyone's job to restore this resource and preserve it for posterity. All fisheries, but especially the historic anadromous fishery, are a critical link in the ecology and health of the San Francisco Estuary, and of Northern California, as well as the entire west coast, and particularly the Pacific Flyway.

In regards item d. of your September 3, 2010 staff recommendations I have some discomfort with a concept that redevelopment might remediate existing environmental degradation or contamination on closed military bases. Redevelopment is usually too anxious for a quick turn-around of their money and most contamination can be remediated only at a very slow pace and at a high price.

Some natural remediation can often be accomplished by returning the land to wildlife habitat and marsh. And these fenced off protected military bases are nurturing waterfowl and wildlife in a most heartwarming manner. To the developer cry of 'if you want to preserve the land the public should buy it'...the public has essentially bought this land once and that opportunity or financing is not likely to occur again.

Also, as these lands are invariably in the 100 year or bay rise flood plains, and usually are underlain by extensive saltwater intrusion as well as the impressive array of contaminants, they challenge infrastructure improvements. And, in-fill padding up is bound to put neighboring properties at a flood prone disadvantage. Please rethink seemingly simplistic jargon that masks intrinsic environmental impacts to Bay resources.

Commendation to staff on these efforts to update the Bay Plan in regards this challenge of climate change.

Libby Lucas,
174 Yerba Santa Ave.,
Los Altos, CA 94022

From: Eugene Spake [<mailto:ewspake@yahoo.com>]
To: joel@bcdc.ca.gov
Sent: Fri, 17 Dec 2010 11:22:26 -0800
Subject: policies relating to sea level rise,my comment for submission to bc dc
commission

Joe Laclair
San Francisco BCDC

Dear Joe and Commission:

Considering that it has been determined by world scientists who study this matter that there will be a 16 inch rise in sea level by 2050, and even higher rise in sea level ongoing because of climate changing carbon gas release that has already happened, it seems only logical to limit development in areas which will be impacted by this process.

Or ,if it is nor legally possible to limit such development, then severe warnings should be issued and publicized.

It is not fair to the people who purchase homes which are in areas near the bay that will, at some point be inundated by storm surges long before 2050... not to be warned by responsible authorities, such as BCDC and the various planning staff of the cities and counties surrounding the S.F. Bay.

I understand that the Developers are complaining about any reasonable response by the BCDC to recognize and deal with this problem. Will these people be able to develop homes and business sites which are subject to such sea level rise, make their money and walk away....leaving a future owner subject to their property losing value and eventually all value as the water rises? Some owners could lose the value of their property before they pay off their mortgage!

Does the BCDC and local governments have the responsibility to deal honestly with the issue of sea level rise and its consequences? Isn't there a liability here? If the BCDC bends to the will of people who are only concerned with short term profits, and not the long term consequences, who then will pick up the pieces?

Raising sea walls would serve to send more of the rising waters somewhere else, where no sea walls were built. Who will pay for the folly of developing land in the areas that will be flooded and eventually ruined? The tax payers? Isn't it bad enough that there is a band of already developed land all around the low-lying perimeter of the Bay? Why set up more victims?

Before being stampeded into avoidance of this issue and passing on the damage to future generations over the next decade or two, would it not be better to set a reasonable standard here?

Thank you for considering the points raised in this letter.

Eugene Spake,
372 Richardson Way,
Mill Valley, CA 94941

PRBO Conservation Science
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Petaluma, CA 94954

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prbo

December 10, 2010

Joe LaClair
San Francisco Bay Conservation and Development Commission
50 California Street, Ste 2600
San Francisco, CA 94111

Re: BCDC Climate Change Bay Plan Amendment

Dear Joe,

Thank you for the opportunity for PRBO Conservation Science (PRBO) to comment on the Climate Change Bay Plan Amendment (comments attached). Founded in 1965, PRBO's 120 scientists conduct research and outreach to advance conservation of birds, other wildlife, and ecosystems (see www.prbo.org). We are very grateful for BCDC's leadership in addressing accelerating climate change impacts on San Francisco Bay ecosystems and infrastructure, and for your commitment to employing science-based adaptation approaches.

As the National Academy of Sciences reported in May 2010 (*America's Climate Choices*), "A strong, credible body of scientific evidence shows that climate change is occurring, is caused largely by human activities, and poses significant risks for a broad range of human and natural systems....Some scientific conclusions or theories have been so thoroughly examined and tested, and supported by so many independent observations and results, that their likelihood of subsequently being found to be wrong is vanishingly small. Such conclusions and theories are then regarded as settled facts. This is the case for the conclusions that the Earth system is warming and that much of this warming is very likely due to human activities."

We strongly urge you to prioritize habitat and ecosystem conservation as a key strategy in protecting infrastructure and other human needs in the face of rising sea levels, increasing extreme weather events and additional impacts in the Bay region as a result of this warming globally. Bay habitats and ecosystems provide many benefits that are essential to human communities that can also reduce some of the impacts of accelerating climate change including clean water, flood control, filtering of pollution, mitigating heat extremes, carbon sequestration, healthy fisheries, habitat for birds and other wildlife, and nature enjoyment.

We recommend that Bay planners, in the interest of securing the region's economic and ecological well-being over the decades ahead, incorporate both (1) a higher top-end estimate of sea level rise by 2100, and (2) considerations for an accelerated rate of sea level rise in the 2nd half of this century. As we have noted in our comments, the high range of sea level rise

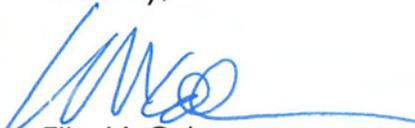
considered by the CA Climate Action Team is 69 inches by 2100 (per Vermeer, et. al., Global sea level linked to global temperature. *Proceedings of the National Academy of Sciences*, 2009.) Sea level rise could exceed these estimates, perhaps significantly, if global greenhouse gas emissions continue on their current trajectory (the contribution to sea level rise from ice melt grows relative to thermal expansion as average global temperatures increase). In a recently released publication, researchers calculated that during the last ice age there were rapid 'jumps' during which average global sea level rose by up to 98 inches (2.5 meters) per century U.D. Stanford et.al., *Sea-level probability for the last deglaciation: A statistical analysis of for-field records. Global and Planetary Change*, 2010.)

We also recommend consideration of potentially deleterious impacts from ocean acidification on the Bay shorelines and habitats. Recent findings from the Puget Sound estuary in Washington State may be instructive for San Francisco Bay regional planning. Researchers found that ocean acidification "may have profound impacts on the Puget Sound ecosystem over the next several decades. These estimates suggest that the role ocean acidification will play in estuaries may be different from the open ocean" (Feely, R. et. al. The Combined Effects of Ocean Acidification, Mixing, and Respiration on pH and Carbonate Saturation in an Urbanized Estuary. *Estuarine, Coastal and Shelf Science*, 2010).

Finally, PRBO, in collaboration with ESA PWA is in the final stages of projecting potential changes in Bay tidal marsh habitats under various climate change scenarios including sea-level rise, salinity changes, sediment availability, and levee configuration (Stralberg, D., Wood, J., Callaway, J., Crooks, S., Brennan, Herbert, Jongsomjit, D., Kelly, M., Parker, Schile, L. & Vandever, Prospects for tidal marsh sustainability in San Francisco Bay: Spatial habitat scenarios and sensitivity analysis, In preparation, 2011). You may access the beta-version of the on-line viewer and decision support tool (as well as further details) at <http://data.prbo.org/apps/sfbslr> (user registration required). We hope to assist you in making full use of this innovative tool to help prioritize actions to address climate change impacts on the region.

Thank you very much for your consideration of PRBO's comments and thank you again for taking timely action on this urgent issue. Please contact me at ecohen@prbo.org if we can provide any other assistance.

Sincerely,



Ellie M. Cohen
President and CEO

Tidal Marshes and Tidal Flats

Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<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.</p>	<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. <u>These recommendations were based on 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 targets for types, amounts, and distribution of habitats.</u></p>	<p>PRBO Conservation Science: Add sentence: <u>Regional targets should also incorporate habitat quality and wildlife targets.</u></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.</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</u></p>	

	<u>marshes, degrading the quality of habitat and resulting in a loss of species and an altered community structure.</u>	
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Tidal Marshes and Tidal Flats

Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
	<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. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. 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>PRBO Conservation Science: 1st sentence: Landward marsh migration <u>will....</u></p> <p>ADD: <u>In areas with low suspended sediment, sea level rise and wave energy may also erode the marsh surface and deposit sediment elsewhere.</u></p> <p><u>Under scenarios of high sea level rise and low sediment availability, high- and mid-marsh habitats, home to endangered species such as the California Clapper Rail, are projected to decline dramatically (~95% and 91% reductions in area respectively). Future potential areas for these habitat types are behind current dikes and developed locations. (PRBO and ESA-PWA, in prep)</u></p>
<p>k. 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,</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>k1. Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. However,</p>	<p>PRBO Conservation Science: Please modify to address this concern: <u>Erosion of existing tidal flats does not</u></p>

<p>due largely to declines in sediment entering the Bay from the Sacramento and San Joaquin Delta, thus potentially exacerbating shoreline erosion and adversely affecting the sustainability of future wetland restoration projects.</p>	<p><u>Scientists studying the Bay estimate observed that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in the volume of sediment entering the Bay annually 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 may also accelerate, thus potentially</u></p>	<p><u>necessarily mean sediment is lost from the system. Normally sediment would be redistributed following erosion. Allowing sediment to redistribute throughout the Bay may be as important as depending on more sediment from outside the system.</u></p> <p><u>There is regional variability in sediment supply with the Bay Estuary. Sediment from watersheds may increase tidal marsh habitat locally but areas located far from local watersheds will likely have insufficient sediment supply for tidal marsh accretion to keep pace with sea level rise.</u></p>
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Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
	<p>exacerbating shoreline erosion and adversely affecting the <u>ecosystem and the sustainability of future wetland ecosystem</u> restoration projects. <u>An adequate supply of sediment is necessary to ensure resilience of the Bay ecosystem as sea level rise accelerates.</u></p>	
	<p>Add underlined language as follows:</p> <p>m. <u>Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. Research on Bay sediment transport processes is needed to understand the volume of sediment available to wetlands, including sediment imported to and</u></p>	<p>California Coastkeeper Alliance suggestion:</p> <p><u>m. Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. Dams, culverts, levees and</u></p>

	<p><u>exported from the Bay. Monitoring of these processes can inform management efforts to maintain an adequate supply of sediment for wetlands.</u></p>	<p><u>other barriers that inhibit the natural flow of sediments also affect the delivery of sediment to tidal 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 for wetlands.</u></p> <p>Alternative language—finding m.</p>
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Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p><u>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 tidal habitats 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</u></p>	<p>PRBO Conservation Science:</p> <p>A definition of the size of buffers is needed. Additionally, it would help to have an explicit mention of the time scale over which the buffers will serve to minimize additional loss of habitat due to sea level rise.</p>

	<u>these targets.</u>	
<p>l. Plant and animal species not present in San Francisco Bay prior to European contact in the late 18th century, known as non-native species, which thrive and reproduce outside of their natural range have made vast ecological alterations to the Bay and have contributed to the serious reduction of native regulations of certain plants and animals through: (1) predation; (2) competition for food, habitat, and other necessities; (3) disturbance of habitat; (4) displacement; or (5) hybridization. Many non-native species enter the Bay from commercial ship ballast water that is discharged into the Bay. Approximately 170 species have invaded the Bay since 1850, and possibly an additional 115 species have been deliberately introduced. By 2001, over 1,200 acres of recently restored tidal marshes have been invaded by introduced cordgrass species, such as salt meadow cordgrass, dense-flowered cordgrass, English cordgrass and smooth cordgrass. At present an average of one new non-native species establishes itself in the Bay every 14 weeks. Control or eradication is a critical step in reducing the harm associated with non-native species.</p>	<p>l. <u>o.</u> Plant and animal species not present in San Francisco Bay prior to European contact in the late 18th century, known as non-native species, which thrive and reproduce outside of their natural range have made vast ecological alterations to the Bay and have contributed to the serious reduction of native regulations of certain plants and animals through: (1) predation; (2) competition for food, habitat, and other necessities; (3) disturbance of habitat; (4) displacement; or (5) hybridization. Many non-native species enter the Bay from commercial ship ballast water that is discharged into the Bay. Approximately 170 species have invaded the Bay since 1850, and possibly an additional 115 species have been deliberately introduced. By 2001, over 1,200 acres of recently restored tidal marshes have been invaded by introduced cordgrass species, such as salt meadow cordgrass, dense-flowered cordgrass, English cordgrass and smooth cordgrass. At present an average of one new non-native species establishes itself in the Bay every 14 weeks. Control or eradication is a critical step in reducing the harm associated with non-native species.</p>	<p>PRBO Conservation Science: ADD SENTENCE AT END:</p> <p><u>Preventing the establishment (preventing introduction in the first place) of invasive species is much more effective than control or eradication. Often once species are established, it can be difficult to impossible to eradicate them. Efforts to prevent the introduction of invasive species should be prioritized.</u></p>

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<p>m. Fill material, such as rock and sediments dredged from the Bay, can enhance or beneficially contribute to the restoration of tidal marsh and tidal flat habitat by: (1) raising areas diked from the Bay to an elevation that will help accelerate establishment of tidal marsh; and (2) establishing</p>	<p>m. <u>p.</u> Fill material, such as rock and sediments dredged from the Bay, can enhance or beneficially contribute to the restoration of tidal marsh and tidal flat habitat by: (1) raising areas diked from the Bay to an elevation that will help accelerate establishment of tidal marsh; and (2) establishing or recreating rare Bay habitat</p>	<p>PRBO Conservation Science: Add subtidal habitat to the sentence so it will read: “...can enhance or beneficially contribute to the restoration of <u>tidal marsh, tidal flat, and</u></p>

or recreating rare Bay habitat types.	types.	<u>subtidal habitats by:...</u> "
Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
	Policies 1 through 3 – no changes	
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. 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.	<p>Add underlined language and delete struck-through language as follows:</p> <p>4. Where and whenever possible <u>feasible</u>, 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. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management 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 <u>habitat restoration and wetland migration.</u></p>	<p>PRBO Conservation Science:</p> <p>MODIFY AS FOLLOWS:</p> <p>"...other aquatic organisms and wildlife, <u>including migratory shorebirds.</u>"</p> <p>ADD AFTER:</p> <p><u>SF Bay is critically important for over 500,000 shorebirds and is designated as a site of Hemispheric Importance by the Western Hemisphere Shorebird Reserve Network (www.whsrn.org). The loss of salt pond habitat to tidal marsh restoration and the loss of mudflat habitat to sea-level rise threatens shorebird populations that depend on the Bay.</u></p>

Tidal Marshes and Tidal Flats		
Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language

	<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 processes necessary to sustain and restore wetlands. Monitoring methods should be updated periodically based on current scientific information.</u></p>	
<p>5. Any 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 relative sea level rise; (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 control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; and (h) site characterization. If success criteria are not met, appropriate corrective measures should be taken.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>5 6. <u>Any ecosystem tidal</u> 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 relative <u>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 control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; and (h) <u>an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises; and</u> (i) site characterization. If success criteria are not met, appropriate corrective <u>adaptive</u> measures should be taken.</p>	<p>PRBO Conservation Science: Analyzing components (a) through (c) may not be effective or efficient if done at the project level or on a project-by-project basis especially for smaller projects. The questions related to (a) through (c) will be best answered by a coordinated study involving multiple projects.</p> <p>PRBO and ESA-PWA, are in the final stages of developing spatial projections of potential changes in tidal marsh habitats under various climate change scenarios defined by sea-level rise rates, salinity change, sediment supply, and levee configuration (see http://data.prbo.org/apps/sfbslr) Project Managers should use this modeling tool for SF Bay marshes to assess a particular site's sustainability in the face of sea level rise, and design the restoration strategy and long-term goals accordingly.</p>

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	Staff's Proposed Findings	Alternative Language
	<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." Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate.</u></p>	<p>PRBO CONSERVATION SCIENCE</p> <p>ADD AFTER "burning of fossil fuels, and deforestation."</p>
	<p>Add underlined language as follows:</p> <p>b. <u>The future extent of global warming is uncertain. It will be driven largely by future greenhouse gas emissions levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. These emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes.</u></p>	

Climate Change		
(There are no existing Bay Plan findings	Staff's Proposed Findings	Alternative Language

and policies on climate change.)		
	<p>Add underlined language as follows:</p> <p>c. <u>Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emissions scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of century. Although these are currently the best science-based sea level rise projections for California, recent observations of global greenhouse gas emissions show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. Therefore, to minimize flood risk, it is prudent to rely on higher projections in the range of possible future sea level rise.</u></p>	<p>Treasure Island Development Authority's suggestion:</p> <p>c. <u>Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emissions scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of century. Although these are currently the best science-based sea level rise projections for California, recent observations of global greenhouse gas emissions show higher trajectories than the IPCC's most intensive emissions scenario. Moreover, melting of the Greenland and Antarctic ice sheets is not currently well reflected in sea level rise projections. Therefore, to minimize flood risk, it is prudent to rely on scientifically based higher projections when establishing a reasonable range of possible future sea level rise.</u></p>

Climate Change

	Staff's Proposed Findings	Alternative Language
		<p>Alternative Language-Finding c.</p> <p>PRBO Conservation Science: <u>The range of models from the CA Climate Action Team efforts project sea level rise for this century from 31 to 69 inches. (per Vermeer, et. al., Global sea level linked to global temperature. <i>Proceedings of the National Academy of Sciences</i>, 2009.)</u></p> <p><u>Researchers estimate that during the last ice age, there were rapid 'jumps' during which average global sea level rose by up to 2.5 meters (~98 inches) per century (J.D. Stanford et.al., Sea-level probability for the last deglaciation: A statistical analysis of far-field records. <i>Global and Planetary Change</i>, 2010.)</u></p>
	<p>Add underlined language as follows:</p> <p>d. <u>Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Niño events, which generally result in persistent low air pressure, greater rainfall, high winds and higher</u></p>	

	<p><u>sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.</u></p>	
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Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>e. <u>Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using higher emissions scenarios, which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude development that cannot be adapted to sea level rise.</u></p>	<p>Baykeeper's suggestion:</p> <p>e. <u>Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using higher emissions scenarios, which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude development requiring new shoreline structures for flood protection or developments that exacerbate existing flood risk through net loss of flood storage capacity.</u></p>
		Alternative Language-Finding e.

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Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>f. <u>Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.</u></p>	<p>PRBO Conservation Science: “stress” is not defined here. Systems under anthropogenic stress? The meaning should be made more explicit.</p>
	<p>Add underlined language as follows:</p> <p>g. <u>In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation</u></p>	<p>PRBO Conservation Science: MODIFY per below: “Adaptation and mitigation measures that are implemented before sea level rises <u>further</u>, may be</p>

	<p><u>refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions can include relocating structures out of flood and inundation zones, protecting shorelines, and 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. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems.</u></p>	<p>cost effective and may protect lives, property, <u>wildlife, habitat and ecosystems.</u></p>
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Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>h. <u>In the context of sea level rise adaptation, innovative approaches will likely include financing mechanisms, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks; maximize compatibility with and integration of natural processes; are resilient over a range of sea level, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale.</u></p>	
	<p>Add underlined language as follows:</p> <p>i. <u>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. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management</u></p>	<p>PRBO Conservation Science:</p> <p>It should be stated explicitly that management actions will be revised based on monitoring of management actions and/or policy implementation as new learning occurs.</p> <p>Suggested language: <u>"integrating and altering management actions and policy as necessary."</u></p>

	actions, and integrating this information into future actions.	
	<p>Add underlined language as follows:</p> <p>j. <u>The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity.</u></p>	

Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>k. <u>Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. A lack of funding to address projected impacts from sea level rise will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</u></p>	<p>California Coastkeeper Alliance suggestion:</p> <p>k. <u>Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, result in the interruption or loss of vital services or degraded water quality. There may be inadequate 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</u></p>

		<p>is allowed to migrate inland.</p> <p>Alternative Language-Finding k.</p>
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Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>l. <u>Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost.</u></p>	
	<p>Add underlined language as follows:</p> <p>m. <u>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. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species, including endangered species. The Bay 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 ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or salinity, altering the food web, and impairing water quality, all of which</u></p>	

	<u>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>Add underlined language as follows:</p> <p>n. <u>Some Bay Area residents, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities.</u></p>	

Climate Change		
	Staff’s Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>o. <u>Approaches for ensuring public safety in developed vulnerable shoreline areas include: (1) protecting existing development; (2) accommodating flooding by building structures that are resilient (3) discouraging permanent new development; (4) allowing only interim new uses that can be removed or phased out as inundation threats increase; and (5) removing existing development.</u></p>	<p>Treasure Island Development Authority’s suggestion:</p> <p>o. <u>Approaches for ensuring public safety in developed vulnerable shoreline areas require adaptive management strategies that include: (1) protecting existing development; (2) accommodating flooding by building structures or infrastructure systems that are resilient and adaptable over time (3) discouraging permanent new development when adaptive management strategies cannot protect public safety in vulnerable shoreline areas; (4) allowing only interim and permanent new uses that can be adapted to protect public safety in vulnerable shoreline areas, or that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) removing existing development that does not ensure public safety in vulnerable shoreline areas through adaptive management strategies.</u></p>

		Alternative Language-Finding o.
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Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>p. <u>Infill development is the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit. Infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities</u></p>	<p>California Coastkeeper Alliance suggestion:</p> <p><i>Note: Do not include proposed finding p.</i></p>
	<p><u>that can be served by transit. Some vulnerable shoreline areas are already improved with development that has regionally significant economic, cultural or social value, and can accommodate infill development.</u></p>	
	<p>Add underlined language as follows:</p> <p>q. <u>When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.</u></p>	
	<p>Add underlined language as follows:</p> <p>r. <u>In some cases, the regional goals of encouraging infill development,</u></p>	<p>California Coastkeeper Alliance suggestion:</p> <p><i>Note: Do not include proposed finding r.</i></p>

	<p><u>remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict, infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; measures can be incorporated that will achieve resilience and sustainability in all elements of</u></p>	<p>Treasure Island Development Authority’s suggestion: <u>r. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. To minimize this conflict, infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life</u></p>
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Climate Change

	Staff’s Proposed Findings	Alternative Language
	<p><u>the project; and a permanent financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future.</u></p>	<p><u>of the project; measures can be incorporated that will achieve resilience and sustainability in all elements of the project; and a permanent financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from sea level rise or storm damage caused by sea level rise in the future.</u></p> <p>Alternative Language-Finding r.</p> <p>PRBO Conservation Science: Rather than saying, “adaptation strategies “can” be used, measures “can” be incorporated to achieve resilience and sustainability, and a permanent financial strategies “can” be developed”, stronger language should be used, - <u>replace can with “should.”</u></p>

	<p>Add underlined language as follows:</p> <p>s. <u>Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain critical habitat or provide opportunities for habitat enhancement. Allowing development in these areas would preclude important habitat enhancement opportunities. Some developed areas may be suitable for ecosystem restoration if existing development is removed to allow the Bay migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods.</u></p>	
	<p>Add underlined language as follows:</p> <p>t. <u>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>	
Climate Change		
	Staff's Proposed Findings	Alternative Language
	<p>Add underlined language as follows:</p> <p>u. <u>Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change.</u></p>	<p>PRBO Conservation Science: <u>Local governments should incorporate regional ecological considerations in developing and implementing local projects.</u></p>

	<p>Add underlined language as follows:</p> <p>v. <u>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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation.</u></p>	
		<p>Save the Bay’s first suggested additional finding:</p> <p><u>The 2009 California Climate Adaptation Strategy (CAS), adopted pursuant to Executive Order S-13-08 establishes avoiding future hazards and protecting critical habitat as a top priority action to combat the impacts of sea level rise. The CAS says that “State agencies should consider project alternatives that avoid significant new development in areas that cannot be adequately protected (planning, permitting,</u></p>

Climate Change		
	Staff’s Proposed Findings	Alternative Language
		<p><u>development, and building) from flooding or erosion due to climate change. The most risk-averse approach for minimizing the adverse effects of sea level rise and storm activities is to carefully consider new development within areas vulnerable to inundation and erosion, and to consider prohibiting development of undeveloped, vulnerable shoreline areas containing critical habitat or opportunities for habitat creation. State agencies should generally not</u></p>

		<p><u>plan, develop, or build any new significant structure in a place where that structure will require significant protection from sea-level rise, storm surges, or coastal erosion during the expected life of the structure. However, vulnerable shoreline areas containing existing development or proposed for new development that has or will have regionally significant economic, cultural, or social value may have to be protected, and in-fill development in these areas should be closely scrutinized. State agencies should incorporate this policy into their decisions, and other levels of government are also encouraged to do so.”</u></p>
		<p>Save the Bay’s second suggested additional finding: <u>The CAS recommends that “If agencies do plan, permit, develop or build any new structures in hazard zones, agencies should employ or encourage innovative engineering and design solutions so that the structures are resilient to potential flood or erosion events or can be easily relocated or removed to allow for progressive adaptation to sea level rise, flooding, and erosion.”</u></p>
Climate Change		
	Staff’s Proposed Findings	Alternative Language
		<p>Save the Bay’s third suggested additional finding: <u>To promote habitat protection in the face of sea level rise, the CAS says “The state should identify priority conservation areas and recommend lands that should be considered for acquisition and preservation. The state should consider prohibiting projects that would place development in undeveloped areas already containing critical habitat, and those containing opportunities for tidal wetland restoration, habitat migration, or buffer zones. The strategy should likewise encourage projects that protect critical habitats, fish, wildlife and other aquatic organisms and connections between coastal habitats. The state should pursue activities that can increase natural resiliency, such as restoring tidal wetlands, living shoreline, and related</u></p>

		<p><u>habitats; managing sediment for marsh accretion and natural flood protection; and maintaining upland buffer areas around tidal wetlands. For these priority conservation areas, impacts from nearby development should be minimized, such as secondary impacts from impaired water quality or hard protection devices.</u></p>
		<p>Save the Bay’s fourth suggested additional finding:</p> <p><u>The CAS recommends that by September 2010 BCDC and “state agencies responsible for the management and regulation of resources and infrastructure subject to potential sea-level rise should prepare agency-specific adaptation plans, guidance, and criteria, as appropriate. Agencies with overlapping jurisdictions in the coastal zone will coordinate when drafting these plans to reduce or eliminate conflicting approaches.” The CAS says that BCDC “should: a. Consider requiring applicants to address how sea-level rise will affect their project, include design features that will ensure that the project objectives are feasible and that the project will not be rendered unusable or inoperable over its lifespan, that critical habitat is protected, and that public access is provided, where appropriate.”</u></p>
	Climate Change	
	Staff’s Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>1. <u>When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best science-based projections currently available, should be used in the risk assessment.</u></p>	<p>Treasure Island Development Authority’s suggestion:</p> <p>1. <u>When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated 100-year flood elevations that take future sea level rise into account. A reasonable range of sea level rise projections for mid-century and end of century, based on the best scientific data available, should be used in the risk assessment.</u></p>

Climate Change

	Staff's Proposed Policies	Alternative Language
		<p>Baykeeper's suggestion:</p> <ol style="list-style-type: none"> 1. <u>For any project located within an area potentially subject to sea-level rise at the 2100 time horizon, a site-specific flood risk assessment must be prepared to identify all potential flood mechanisms, degrees of uncertainty, and consequences of defense failure. Site-specific risk assessments should demonstrate that the project shall maintain resiliency to gradual sea-level rise over the life of the development as well as during storm surges at varying return frequencies. In addition, risk assessments should demonstrate that a project shall not exacerbate existing flood risk through net loss of flood storage capacity. Risk assessments should be accompanied and informed by the results of 2-D flood models specific to the proposed development. For complex sites or breach analysis studies, BCDC may request more advanced 3-D modeling pending input from qualified agencies or outside reviewers. Projects exempt from this requirement include habitat restoration and site remediation projects that will not alter the flood storage capacity of the site.</u> <p>Alternative Language-Policy 1</p>

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>2. <u>To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects--other than minor repairs of existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place--should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	<p>California Coastkeeper Alliance's suggestion:</p> <p>2. <u>To protect public safety and ecosystem services, projects should be discouraged within areas vulnerable to future shoreline flooding... All projects--other than minor repairs of existing facilities, small projects that do not increase risks to public safety, and interim projects--should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p> <p>Treasure Island Development Authority's suggestion:</p> <p>2. <u>To protect public safety and ecosystem services, within areas vulnerable to future shoreline flooding, all projects--other than minor repairs of existing facilities, small projects that do not</u></p>

increase risks to public safety, interim projects, infill projects within existing urbanized areas, and Priority Development Areas as designated by the Association of Bay Area Governments' FOCUS study that likely will be protected whether or not the infill takes place--should be designed to be resilient to a mid-century or a minimum of 50-year sea level rise projection based upon a risk assessment conducted for the project. If it is likely the project will remain in place longer than mid-century, an adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.

Alternative Language-Policy 2

PRBO CONSERVATION SCIENCE

Change to:

To protect public safety and ecosystem benefits to society such as flood control, clean water and fisheries, within areas vulnerable to future shoreline flooding,....

Sea level rise is projected to increase at accelerated rates in the second half of the century. Planning for mid-century resilience is likely to lead to many projects that are vulnerable to sea level rise in the second part of the century. One hundred year resiliency should be encouraged.

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>3. <u>Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change.</u></p>	<p>Save the Bay's suggestion:</p> <p>3. <u>Undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change. Development in these areas should be discouraged.</u></p> <p>Alternative Language-Policy 3</p>

	<p>Add underlined language as follows:</p> <p>4. <u>Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	
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Climate Change

	Staff's Proposed Policies	Alternative Language
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	<p>Add underlined language as follows:</p> <p>5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity. The strategy should incorporate an adaptive management approach, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared and regularly updated in consultation with government agencies with authority over flood protection.</u></p> <p><u>The regional strategy should determine where existing development should be protected and infill development encouraged, where new development</u></p>	<p>Treasure Island Development Authority's suggestion:</p> <p>5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas, Priority Development Areas as designated by the ABAG FOCUS study, and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity. The strategy should incorporate an adaptive management approach, be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding. The maps should be prepared and regularly updated in consultation with government agencies with authority over flood protection.</u></p> <p><u>The regional strategy should determine where existing development should be protected and infill development</u></p>
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	<p><u>should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>	<p><u>encouraged, where new development should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.</u></p>
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Climate Change

	Staff's Proposed Policies	Alternative Language
	<p><u>The goals of the strategy should be to:</u></p> <p>a. <u>advance regional public safety and prosperity by protecting most existing shoreline development, especially 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, major parks, recreational areas and trails;</u></p>	<p>California Coastkeeper Alliance's suggestion:</p> <p><u>a. advance regional public safety and prosperity by protecting most existing shoreline environment, especially 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, major parks, recreational areas and trails;</u></p> <p>Treasure Island Development Authority's suggestion:</p> <p><u>a. advance regional public safety and prosperity by protecting most existing shoreline development and Priority Development Areas as designated by the ABAG FOCUS study, especially 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, major parks, recreational areas and trails;</u></p>
	<p>b. <u>enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by</u></p>	<p>PRBO Conservation Science: Assuring" adequate volumes of sediment for marsh accretion may not be feasible. Instead,</p>

	<p><u>identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;</u></p>	<p>measures can be taken to help increase the amount of sediment available (e.g., facilitating beneficial re-use of dredge material at restoration sites to kick-start accretion, restoring local watersheds to increase sediment input to the Bay, and staggering in time large-scale tidal restoration projects that draw suspended sediment out of the system).</p>
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Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>c. <u>integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p> <p>d. <u>encourage innovative approaches to sea level rise adaptation;</u></p> <p>e. <u>identify a framework for integrating the adaptation responses of multiple government agencies;</u></p> <p>f. <u>integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate change;</u></p> <p>g. <u>advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u></p> <p>h. <u>address any existing contamination and the implications of the contamination on water quality;</u></p> <p>i. <u>support research that provides information</u></p>	<p>California Coastkeeper Alliance's suggestion:</p> <p>c. <u>integrate the protection of existing and future shoreline environment with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p> <p>California Coastkeeper Alliance's suggestion:</p> <p>g. <u>advance regional sustainability, encourage job creation, and provide diverse housing served by transit;</u></p> <p>Alternative Language-Policy 5</p>

	<p><u>useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u></p> <p>j. <u>identify actions to prepare and implement the strategy, including any needed changes in law; and</u></p> <p>k. <u>identify mechanisms to provide information, tools, and financial resources so local governments can integrate regional climate change adaptation planning into local community design processes.</u></p>	
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Climate Change

	Staff's Proposed Policies	Alternative Language
	<p>Add underlined language as follows:</p> <p>6. <u>Until a regional sea level rise adaptation strategy can be completed, when planning or regulating new development in areas vulnerable to future shoreline flooding, new projects should be limited to:</u></p> <p>a. <u>minor repairs of existing facilities or small projects that do not increase risks to public safety;</u></p> <p>b. <u>transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing development;</u></p> <p>c. <u>infill development within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u></p>	<p>Baykeeper's suggestion:</p> <p>6. <u>Until a regional sea level rise adaptation strategy can be completed, when planning or regulating new development in areas vulnerable to future shoreline flooding, new projects located below the 100 year flood level plus 2100 sea-level rise should be limited to:</u></p> <p>a) <u>minor repairs of existing facilities or changes to land use designation small projects that do not increase risks to public safety;</u></p> <p>b) <u>'Less Vulnerable' and 'Water Compatible' developments, as defined below, and subject to appropriate pollution-prevention controls and adaptive management strategies.</u></p> <p><u>'Less Vulnerable' developments include:</u></p> <ul style="list-style-type: none"> • <u>Retail buildings;</u> • <u>Non-residential offices;</u> • <u>Restaurants;</u> • <u>Storage and distribution facilities;</u> • <u>Sand and gravel processing areas;</u> • <u>Military installations;</u>

	<p>d. <u>redevelopment that will remediate existing environmental degradation or contamination, particularly on closed military bases, if the redevelopment will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding 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 sustainability in all elements of the project; (iii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future;</u></p> <p>e. <u>projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require shoreline protection during the life of the project; or</u></p> <p>f. <u>public parks, natural resource restoration or environmental enhancement projects.</u></p>	<ul style="list-style-type: none"> • <u>Assembly and leisure; and</u> • <u>Land and buildings used for agriculture.</u> <p><u>'Water Compatible' developments include:</u></p> <ul style="list-style-type: none"> • <u>Roads and transportation facilities necessary for existing development;</u> • <u>Electrical, water and sewage transmission infrastructure;</u> • <u>Maintenance of flood control structures;20</u> • <u>Docks, marinas and wharves;</u> • <u>Navigation facilities;</u> • <u>Ship building, repairing and dismantling, dockside fish processing and compatible activities requiring a waterside location;</u> • <u>Water-based recreation;</u> • <u>Public parks, habitat restoration projects, environmental remediation projects and essential infrastructure for these projects, such as restrooms and changing areas.</u> <p>c) <u>redevelopment of 'More Vulnerable' developments, including residential units and health service facilities, that will remediate existing environmental degradation or contamination if the redevelopment (1) provides wider sustainability benefits to the community that outweigh flood risk and potential costs associated with shoreline defense and (2) includes the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future; (iii) evidence that project implementation shall not exacerbate</u></p>
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		<p><u>flood risk through loss of flood storage capacity or;</u></p> <p><u>d) projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require shoreline protection during the life of the project.</u></p>
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Climate Change		
	Staff's Proposed Policies	Alternative Language
		<p>California Coastkeeper Alliance suggestion: <i>Note: Do not include finding 6(c).</i></p> <p>Treasure Island Development Authority's suggestion: <i>Note: Keep the rest of Policy 6 as proposed, but revise Policy 6(d)(2)(iii) as follows:</i></p> <p><u>d. (2) (iii) a permanent financial strategy that will guarantee the general public will not be burdened with the cost of protecting the project from sea level rise or storm damage caused by sea level rise in the future;</u></p> <p>Alternative Language-Policy 6:</p> <p>PRBO Conservation Science: 6c) Feasibility of protecting these areas from sea level rise should also be taken into consideration.</p>

Climate Change		
	Staff's Proposed Policies	Alternative Language
	<p>7. <u>To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.</u></p>	

Safety of Fills		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<p>f. Flood damage to fills and shoreline areas can result from a combination of heavy rainfall, high tides, and winds blowing onshore. To prevent such damage, structures on fill or near the shoreline should be above the highest expected water level during the expected life of the project or should be protected for the expected life of the project by levees of an adequate height.</p>	<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,</u> heavy rainfall, high tides, and winds blowing onshore. <u>The most effective way</u> To to prevent such damage, <u>is to locate projects and facilities</u> 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 <u>Other approaches that can reduce flood damage include protecting</u></p>	<p>Baykeeper's suggestion:</p> <p>f. Flood damage to fills and shoreline areas can result from a combination of <u>sea level rise, storm surge,</u> heavy rainfall, high tides, and winds blowing onshore. <u>The most effective way</u> To to prevent such damage <u>is to locate projects outside areas at risk of sea-level rise and storm surges of an appropriate return frequency.</u> structures on fill or near the shoreline should be above the highest expected water level during the expected life of the project or should be protected for the expected life of the project by levees of an adequate height. <u>Other approaches that can reduce flood damage include protecting structures or areas with biological engineering approaches (i.e. Living Walls), levees, seawalls,</u></p>

	<p><u>structures or areas with levees, of an adequate height seawalls, tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time.</u></p>	<p><u>tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time.</u></p> <p>Alternative Language-Finding f:</p>
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Safety of Fills

Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<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. 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. 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</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. <u>Sea level is rising at an accelerated rate due to global climate 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</p>	

	land area has been gradually lifting while in the South Bay excessive pumping from underground fresh water reservoirs has caused extensive	
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Safety of Fills

Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<p>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 occurs, extensive levees may be needed to prevent inundation of low-lying areas by the extreme high water levels.</p>	<p>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,</u> <u>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>	
Safety of Fills		
Existing Bay Plan Findings	Staff's Proposed Policies	Alternative Language
<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 Survey, for purposes of data comparison and evaluation.</p>	<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>	

Safety of Fills

Existing Bay Plan Findings	Staff's Proposed Policies	Alternative Language
<p>4. To prevent damage from flooding, structures on fill or near the shoreline should have adequate flood protection including consideration of future relative sea level rise as determined by competent engineers. As a general rule, structures on fill or near the shoreline should be above the wave runup level or sufficiently set back from the edge of the shore so that the structure is not subject to dynamic wave energy. In all cases, the bottom floor level of structures should be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments specifically designed to tolerate periodic flooding.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>4. <u>Adequate measures should be provided to prevent damage from sea level rise and storm activity flooding, that may occur structures on fill or near the shoreline over the expected life of a project. 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 projects. 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 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</u></p>	<p>Baykeeper's suggestion:</p> <p>4. <u>Adequate measures should be provided to prevent damage from sea level rise and storm activity flooding, that may occur structures on fill or near the shoreline over the expected life of a project. 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 projects. 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, including an appropriate freeboard, is placed at a height appropriate for the use and location of the site, as informed by a flood risk assessment in consultation with Flood Control Districts and/or the Army Corps of Engineers; of structures will be above the highest estimated tide elevation. Exceptions to the general height rule may be made for developments be 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</u></p>

	placed in the Bay.	for levee widening is placed in the Bay. Alternative Language-Policy 4 :
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Safety of Fills

Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
<p>5. 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.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>5. 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.</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>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 <u>address</u> future relative sea level rise and should assure so that new structures and uses attracting people are not approved in <u>current or future</u> flood prone areas, or in areas that will become flood prone in the future; and that structures and uses that are <u>approved</u> approvable will be built at stable elevations and are properly designed to assure long-term protection from flood hazards <u>shoreline flooding</u>.</p>	
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Protection of the Shoreline Protection

Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
	<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>a. Erosion control projects are often needed to protect 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 often require periodic maintenance and reconstruction.</p>	<p>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.</u> 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>Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.</u></p>	

<p>b. Most erosion control projects involve some fill which can adversely affect natural resources such as water surface area and volume, tidal circulation, wildlife use, marshes, and mudflats.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>b. c. Most erosion control <u>structural shoreline protection</u> projects involve some fill, which can adversely affect natural resources, such as water surface area and volume, tidal circulation, <u>and</u> wildlife use. marshes, and mudflats. <u>Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts. Physical and visual public access can be provided on levees and other protection structures. 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>	
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<p align="center">Protection of the Shoreline Protection</p>		
<p align="center">Existing Bay Plan Findings</p>	<p align="center">Staff's Proposed Findings</p>	<p align="center">Alternative Language</p>
<p>c. Shoreline protection structures, such as riprap and sea walls, are most effective and less damaging to natural resources if they are the appropriate kind of structure for the project site and erosion problem, and are properly designed, constructed, and maintained. Because factors affecting erosion 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 conditions of and the 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>Add underlined language and delete struck-through language as follows:</p> <p>e. d. Structural S <u>Shoreline protection structures, such as riprap and sea walls, are</u> <u>is</u> 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 <u>is</u> improperly designed and constructed to meet the unique <u>site characteristics, flood</u> conditions of, 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</p>	

	site's natural resources.	
	<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>	

Protection of the Shoreline Protection		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
d. Nonstructural erosion control methods, such as marsh plantings, are typically effective only in areas experiencing mild erosion. However, in some instances, it may be possible to combine marsh restoration with structural approaches to control shoreline erosion, thereby minimizing the erosion control project's impact on natural resources.	<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 tidal marshes marsh plantings, <u>can provide effective flood control but</u> are typically effective <u>for erosion control</u> only in areas experiencing mild erosion. However, i In some instances, it may be possible to combine marsh habitat restoration, enhancement or protection 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>	
e. Loose dirt, concrete slabs, asphalt, bricks, scrap wood and other kinds of debris, are generally ineffective in halting shoreline erosion and may lead to increased fill. Although providing some short-term shoreline protection, protective structures constructed of such debris materials	<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</p>	

<p>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>may lead to increased fill <u>or release of pollutants</u>. 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>	
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Protection of the Shoreline Protection		
Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
<p>1. New shoreline erosion control projects and the maintenance or reconstruction of existing erosion control facilities should be authorized if: (a) the project is necessary to protect the shoreline from erosion; (b) the type of the protective structure is appropriate for the project site and the erosion conditions at the site; and (c) the project is properly designed and constructed. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion control projects.</p>	<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 <u>to protect existing shoreline development from flooding or erosion</u>; (b) the type of the protective structure is appropriate for the project site, <u>the uses to be protected</u>, 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 <u>integrated with current or planned adjacent shoreline protection measures</u>. Professionals knowledgeable of the Commission's</p>	<p>Treasure Island Development Authority's suggestion:</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 <u>to protect existing shoreline development and Priority Development Areas as designated by the ABAG FOCUS study from flooding or erosion</u>; (b) the type of the protective structure is appropriate for the project site, <u>the uses to be protected</u>, 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-</u></p>

	<p>concerns, such as civil engineers experienced in coastal processes should participate in the design.</p>	<p><u>year flood event that takes future sea level rise into account; (d) the project is properly designed and constructed to prevent significant impediments to physical and visual public access; and (e) the protection is integrated with current or planned adjacent 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>Alternative Language-Policy 1</p>
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Protection of the Shoreline Protection

Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
<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 quarrystone or concrete pieces that have either been specially cast or carefully selected for size, density, durability, 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>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 quarrystone or concrete pieces that have either been specially cast, <u>are free of extraneous materials from demolition debris,</u> or <u>and are carefully selected for size, density, 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>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 and that the effects of the erosion control project on natural resources during the life of the project will be the minimum necessary.</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 and <u>flooding</u> and that the effects of the <u>erosion control shoreline protection</u> project on natural resources during the life of the project will be the minimum necessary.</p>	

Protection of the Shoreline Protection

Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
<p>4. Shoreline protective 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 projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.</p>	<p>4. <u>Whenever feasible and appropriate</u>, shoreline protective <u>on</u> projects should include provisions for nonstructural methods such as marsh vegetation where feasible <u>and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management</u>. 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 establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable <u>feasible</u>.</p>	
	<p>Add underlined language as follows:</p> <p>5. <u>Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where significant impacts cannot be avoided, mitigation or alternative public access should be provided.</u></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 relate to the proposed changes, especially those that the staff is not proposing to change, is available at http://www.bcdc.ca.gov/laws_plans/plans/sfbay_plan.shtml.

Public Access		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
	<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>h. 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.</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</u></p>	

	<u>elevation or located farther inland than existing public access areas).</u>	
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Public Access		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
<p>k. 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. Accurate characterization of site, habitat and wildlife conditions, and of likely human activities, would provide information critical to understanding potential effects on wildlife.</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>k <u>l</u>. 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. Accurate characterization of <u>current and future</u> site, habitat and wildlife conditions, and of likely human activities, would provide information critical to understanding potential effects on wildlife.</p>	
<p>I. 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</p>	<p>Add underlined language and delete struck-through language as follows:</p> <p>I <u>m</u>. 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</p>	<p>PRBO Conservation Science Pet restrictions such as leash requirements are not effective unless strictly enforced which is costly and unpopular. ADD: <u>Areas near sensitive wildlife such as nesting endangered species should</u></p>

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,	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	<u>be closed to pets and/or humans.</u>
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Public Access		
Existing Bay Plan Findings	Staff's Proposed Findings	Alternative Language
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 and the likely human uses of the site.	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, and the likely human uses of the site, <u>and the potential impacts of future sea level rise climate change.</u>	
Public Access		
Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
	Add underlined language as follows: 5. <u>Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.</u>	
5. 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	Add underlined language and delete struck-through language as follows: 5 <u>6.</u> Whenever public access to the Bay is provided as a condition of development, on fill or on the	

<p>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.</p>	<p>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 either be required to remain viable in the event of future sea level rise or flooding, or equivalent access consistent with the project should be provided nearby.</u></p>	
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January 12,2011

Via Electronic Mail

R. Sean Randolph
Chainnan
Will Travis
Executive Director
San Francisco Bay Conservation and Development Commission
50 California Street, #2600
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Steve Heminger
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Jack Broadbent
Executive Officer
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109

Re: Bay Plan Amendments on Climate Change

Gentlemen:

We are pleased to convey the results of an effort undertaken at the close of 2010 to address the concerns expressed by local and regional government agencies and private sector stakeholders over the Bay Conservation and Development Commission's proposed Bay Plan amendments on Climate Change promulgated last September 3. These results are offered in the form of a set of edits and re-casting of certain provisions of proposed BCDC findings and policies concerning the long-term rise of sea levels along San Francisco Bay and Suisun Marsh. We believe the proposed provisions, as modified in the attached documents, will resolve most concerns expressed about the proposed amendments. We believe they do so in an especially effective manner, by incorporating considerations of sea level rise into the "Sustainable Communities Strategy" as part of the SB 375 regional land-use and transportation planning being carried out under the oversight of the Metropolitan Transportation Commission and Association of Bay Area

Governments. Moreover, we believe the principles embodied in the enclosed documents will receive broad public support and advance materially BCDC's recognized leadership on climate change adaptation across the Bay Area, the state of California and nationally.

The language in the attached document represents an amalgamation of positions expressed by various stakeholders during the fall of 2010, tempered by the candid and constructive discussions that the various regional agencies and other stakeholders have had. In this draft, we have tried to capture what we understand to be the consensus.

To aid in a reading of this language, we would emphasize the following key points:

First, all parties recognize, and the language acknowledges, that sea-level rise is a present and [REDACTED] consequence of climate change and that we must approach environmental and economic stewardship of the shoreline and low-lying bayside communities with that in mind.

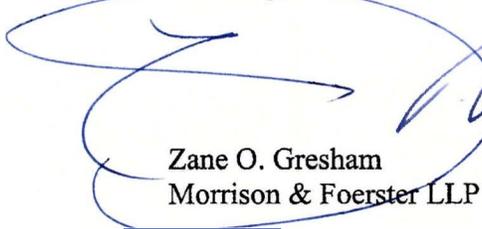
Secondly, it clarifies what BCDC has said: the amendment is not intended to erode local autonomy over land-use decisions, while providing a resource for local governments looking to respond and adapt to rising sea levels.

Finally, in recognition that sea level rise is not a one-dimensional policy challenge, it harmonizes sea level rise adaptation with related and overlapping climate change adaptation and mitigation objectives underlying development of the Bay Area's SB 375 Sustainable Communities Strategy.

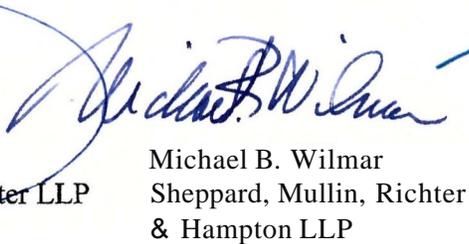
We also understand that a number of organizations with strong interests in this subject support this approach, and likely will be communicating directly with BCDC to express that support.

Clearly, there is much more we could say at this time on each of these and other points. For now we would like to provide this document to inform and support the redrafting of the proposed climate change amendments being carried out by BCDC staff.

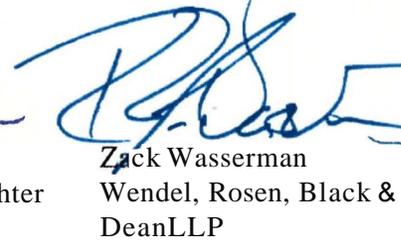
Sincerely,



Zane O. Gresham
Morrison & Foerster LLP



Michael B. Wilmar
Sheppard, Mullin, Richter
& Hampton LLP



Zack Wasserman
Wendel, Rosen, Black &
Dean LLP

Consensus Draft Proposed Climate Change Amendments to Bay Plan

Jan. 12, 2011

[Marked against existing Bay Plan]

Guide to Markup:

Normal text = existing Bay Plan language

Underlined text = proposed additions to Bay Plan

~~Strikethrough text~~ = proposed deletions from the Bay Plan

The Commission finds and declares that the Amendments to the Bay Plan adopted pursuant to San Francisco Bay Plan Amendment No. _____:

- (1) Shall apply solely to projects and activities within the Commission's jurisdiction, as defined by the McAteer-Petris Act at Government Code § 66610) and the Suisun Marsh Preservation Act of 1977 at Public Resources Code § 29101, ("Permit Jurisdiction"), that require either (a) a permit from the Commission pursuant to its authority under the McAteer-Petris Act or the Suisun Marsh Preservation Act of 1977, or (b) requiring a consistency determination under the Coastal Zone Management Act;
- (2) Shall not apply to any project or activity located outside the Permit Jurisdiction, even if such project or activity is asserted to affect areas within the Permit Jurisdiction. For projects or activities that are located partly within the Permit Jurisdiction and partly outside such area, the Amendments shall apply only to those activities or that portion of the project within the Permit Jurisdiction.
- (3) To the maximum extent permitted by law, shall not be construed as enforceable policies or in the nature of recommendations under the Coastal Zone Management Act; and
- (4) To the maximum extent permitted by law, shall not be considered part of an "applicable plan" adopted by the Commission for purposes of the California Environmental Quality Act (CEQA), and therefore shall not require a discussion whether a proposed project or activity is inconsistent with these Bay Plan Amendments.

Any project or activity for which an application for a Commission permit is deemed complete before _____, shall be subject to the Bay Plan policies in effect as of _____.

Projects or activities undertaken in the future within the scope of an existing permit for a phased development shall be governed exclusively by the terms of the existing permit, and shall not be subject to any Bay Plan policies adopted subsequent to the approval of the permit.

Findings / Policies
Tidal Marshes and Tidal Flats – Findings
<p>g. <u>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 conditions of tidal inundation, salinity, and sedimentation of 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 targets for types, amounts and distribution of habitats.</u></p>
<p>i. <u>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. 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>

k. 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. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. 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.

~~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 observed that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in the volume of sediment entering the Bay annually 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 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.

m. Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. 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 for wetlands.

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 tidal habitats to move landward. Buffer areas may be important 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 targets. (Proposed Amendments, pg. 5, para. n.)

~~l. o.~~ [renumbered but no proposed changes] (Proposed Amendments, pg. 7, para. o.)

~~m. p.~~ [renumbered but no proposed changes] (Proposed Amendments, pg. 6, para. p.)

Tidal Marshes and Tidal Flats – Policies

4. Where and whenever possible feasible, former tidal marshes and tidal flats that have been diked from the Bay should be considered for (i) restoration restored to tidal action in order to replace lost historic wetlands and/or should be managed (ii) management in a manner so as 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 to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management efforts that result in a Bay ecosystem resilient to climate change and sea level rise. 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 pPublic agencies should make every reasonable efforts to acquire these lands from willing sellers for the purpose of habitat restoration and wetland migration. (Proposed Amendments, pp.6- 7, para. 4.)

5. The commission should support comprehensive Bay sediment research and monitoring to understand sediment processes necessary to sustain and restore wetlands. Monitoring methods should be updated periodically based on current scientific information. (Proposed Amendments, pg. 7, para. 5.)

5-6. Any ~~ecosystem 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 relative~~ how the system's adaptive capacity can be enhanced so that it is resilient to sea level rise and climate change; (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 control; (f) rates of colonization by vegetation; (g) the expected use of the site by fish, other aquatic organisms and wildlife; (h) an appropriate buffer, where feasible, between shoreline development and habitats to protect wildlife and provide space for marsh migration as sea level rises; and (j) site characterization. If success criteria are not met, appropriate ~~corrective~~ adaptive measures should be taken.

Climate Change – Findings

a. 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." Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate. (Proposed Amendments, pg. 8, para. a.)

b. The future extent of global warming is uncertain. It will be driven largely by future greenhouse gas emission levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. While these emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes, scientific uncertainty remains regarding the pace and amount of sea level rise. As additional data are collected and analyzed, projections of future climate changes, including sea level rise projections, will continue to change. The National Academy of Sciences is in the process of developing a Sea Level Rise Assessment Report that will address potential impacts of sea level rise on coastal areas throughout the United States, including California and the Bay Area. (Proposed Amendments, pg. 8, para. b.)

c. Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emission scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of the century. The Coastal and Ocean Resources Working Group of the Climate Action Team has recognized that it may not be appropriate to set a firm value for sea level rise projections and that, based on a variety of factors, agencies may determine to use different sea level rise projections. Although the IPCC values are generally recognized as the best science-based sea level rise projections for California, as mentioned above, sea level rise projections will change over time. Moreover, melting of the Greenland and Antarctic ice sheets may not be currently well reflected in sea level rise projections.

d. Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Nino events, which generally result in persistent low air pressure, greater rainfall, high winds and higher sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.

Proposed climate change amendments to Bay Plan

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e. Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies such as the National Oceanic and Atmospheric Agency, the Federal Emergency Management Agency, the United States Army Corps of Engineers, cities, counties, and flood control districts, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using a range of scientifically based scenarios, including projections which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and thoroughly analyze new development to determine whether it can be adapted to sea level rise.

f. Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.

g. In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions that protect existing and newly constructed development and infrastructure can include protecting shorelines, promoting appropriate infill development, and designing new construction to be resilient to sea level rise. Other options include relocating out of flood and inundation zones structures not necessary for serving communities. Some actions can integrate adaptation and mitigation strategies, such as restoring tidal marshes that both sequester carbon and provide flood protection. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems. Identifying appropriate adaptation strategies requires complex policy considerations. Implementing many adaptation strategies will require action and funding by federal, state, regional and local agencies with planning, funding and land use decision-making authority beyond the Commission's jurisdiction.

h. In the context of sea level rise adaptation, it is likely that myriad innovative approaches will emerge, likely including financing mechanisms to spread equitably the costs of protection from sea level rise, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks and impacts to critical infrastructure; maximize compatibility with and integration of natural processes; are resilient over a range of sea levels, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale. Developing the right mix of approaches would best be accomplished through a comprehensive regional adaptation strategy developed through a process involving various stakeholders and local, regional, state and federal agencies. (Proposed Amendments, pg. 10, para. h.)

i. 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. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management actions, and integrating this information into future actions. (Proposed Amendments, pg. 11, para. i.)

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j. The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes, while providing for improvement of the human condition for all the people of the world. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity. (Proposed Amendments, pg. 11, para. j.)

k. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, may be, or may become, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs or result in the interruption or loss of vital services or degraded water quality. A current lack of funding to address projected impacts from sea level rise necessitates a collaborative approach with all stakeholder groups to find strategic and innovative solutions to advance the Bay Area's ability to meet environmental, public health, equity and economic goals.

l. Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost. (Proposed Amendments, pg. 12, para. l.)

m. The Bay ecosystem contains diverse and unique plants and animals and provides many benefits to humans. For example, tidal wetlands may provide important flood protection, improve water quality, and sequester carbon. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species including endangered species. The Bay 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 ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or salinity, altering the food web, and impairing water quality, all of which may impair the system's ability to rebound and function. Moreover, further loss of tidal wetland will increase the risk of shoreline flooding. (Proposed Amendments, pg. 12, para. m.)

n. Some Bay Area communities, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities. (Proposed Amendments, pg. 12, para. n.)

o. Approaches for ensuring public safety in developed vulnerable shoreline areas through adaptive management strategies include but are not limited to: (1) protecting existing and planned appropriate infill development; (2) accommodating flooding by building or renovating structures or infrastructure systems that are resilient or adaptable over time; (3) discouraging permanent new development when adaptive management strategies cannot protect public safety; (4) allowing only new uses that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) over time and where feasible and appropriate, removing existing development where public safety cannot otherwise be ensured. Determining the appropriate approach and financing structure requires the weighing of various policies and is best done through a collaborative approach that directly involves the affected communities and other governmental agencies with authority or jurisdiction. Some adaptive management strategies may require action and financing on the regional or sub-regional level across jurisdictions.

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p. Infill development is building homes, businesses and/or public facilities and infrastructure on vacant, underutilized and/or environmentally degraded lands within existing urban areas that are served by existing or planned transit and transportation infrastructure. Infill development includes the conversion of former military bases and adjacent property to job-producing or other productive uses and the adaptive reuse of existing structures. Infill development has been identified in state law as an important strategy for reducing greenhouse gas emissions. To further this policy objective, the Association of Bay Area Governments and the Metropolitan Transportation Commission initiated the FOCUS program to develop a regional development strategy that promotes a more compact Bay Area land use pattern. In consultation with local governments, the FOCUS program identified priority development areas for infill development in the Bay Area. These priority development areas are anticipated to be key components of the Bay Area's Sustainable Communities Strategy that will be adopted and periodically updated pursuant to SB 375. One of the Commission's objectives in adopting these sea level rise policies is to facilitate implementation of the Sustainable Communities Strategy. Some vulnerable shoreline areas are already improved with public infrastructure and private development that has regionally significant economic, cultural or social value, and can accommodate infill development.

q. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. Methods to minimize this conflict include, but are not limited to: clustering infill or redevelopment in low-lying areas on a portion of the property to reduce the area that must be protected; formulating an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; incorporating measures that will enhance project resilience and sustainability and developing a project-based financial strategy and/or a public financing strategy, as appropriate, to fund future flood protection for the project, which may also include existing nearby development. Reconciling these different worthy goals and taking appropriate action requires weighing competing policy considerations and would be best accomplished through a collaborative process involving diverse stakeholders, similar to that being undertaken by the Joint Policy Committee to develop the Sustainable Communities Strategy.

r. Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain important habitat or provide opportunities for habitat enhancement. Proposals for development in these areas should be evaluated to assess their potential for habitat enhancement opportunities, their potential to address the region's needs for appropriate infill development, regional benefits, and greenhouse gas reduction. Some developed areas may be suitable for ecosystem restoration if existing development is removed to allow the Bay to migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods. (Proposed Amendments, pg. 14, para. s.)

s. 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 with local governments, including agencies with responsibility for flood protection, is desirable to optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty.

t. Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. The Commission will work through the Joint Policy Committee to harmonize Bay Plan Climate Change policies with the emerging SCS and update the Bay Plan if necessary to ensure that appropriate infill projects are encouraged.

u. The Commission's legal authority and regulatory jurisdiction were created for the purposes of allowing the Commission to advance the State goals of preventing unnecessary filling of the Bay and increasing public access to the Bay shoreline. To effectuate those goals, the Commission's permitting jurisdiction is limited, as described in the McAteer-Petris Act at Government Code § 66610 and the Suisun Marsh Preservation Act of 1977 ("permit jurisdiction"). Recognizing this limited legal authority and regulatory jurisdiction, it is the intent of the Commission that the climate change policies shall:

(1) apply solely to projects and activities within the Commission's permit jurisdiction that require either (a) a permit from the Commission pursuant to its authority under the McAteer-Petris Act or the Suisun Marsh Preservation Act of 1977, or (b) a consistency determination under the Coastal Zone Management Act;

(2) not apply to any project or activity located outside the permit jurisdiction, even if such project or activity is asserted to affect areas within the permit jurisdiction. For projects or activities that are located partly within the permit jurisdiction and partly outside such area, the policies shall apply only to those activities or that portion of the project within the permit jurisdiction.

(3) to the maximum extent permitted by law, not be construed as enforceable policies or in the nature of recommendations under the Coastal Zone Management Act; and

(4) to the maximum extent permitted by law, not be considered part of an "applicable plan" adopted by the Commission for purposes of the California Environmental Quality Act (CEQA), and therefore shall not require a discussion whether a proposed project or activity is inconsistent with these policies.

Climate Change – Policies

1. Shoreline area planning, and/or designing larger shoreline projects, should include preparation of a risk assessment, based on the estimated 100-year flood elevations that take the currently available best estimates of future sea level rise and current or planned flood protection into account. A range of sea level rise projections for mid-century and end of century, based on the best scientific data available, should be used in the risk assessment. Inundation maps should be prepared under the direction of a coastal engineer.

2. To protect public safety and ecosystem services, within areas which an appropriate risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects – other than repairs to existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas – should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project by a qualified engineer. If it is likely the project will remain in place longer than mid-century, and adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.

3. To the extent feasible, undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be evaluated relative to their potential to address competing concerns relating to infill development, regional benefits, potential for habitat enhancement opportunities, and greenhouse gas reduction to address the adverse environmental impacts of climate change. This evaluation process depends on identifying and balancing competing concerns and should be undertaken in conjunction with the development of the regional adaptation strategy described in Climate Change Policy 5. (Proposed Amendments, pg. 15, para. 3.)

4. Whenever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.

Proposed climate change amendments to Bay Plan

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5. 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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.

The Commission recommends that: (i) the strategy incorporate an adaptive management approach; (ii) the strategy be consistent with the SCS adopted and updated pursuant to SB 375; (iii) the strategy be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding; (iv) the maps should be prepared under the direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection; and (v) particular attention should be given to identifying and encouraging the development of long-term regional flood protection strategies that may be beyond the fiscal resources of individual local governments.

Ideally, the regional strategy will determine where and how existing development should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.

The entities that formulate the regional strategy are encouraged to consider the following strategies and goals:

a. advance regional public safety and economic prosperity by protecting most existing and appropriately planned shoreline development to the maximum extent feasible, especially development that provides regionally significant benefits, and by protecting infrastructure that is crucial to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, major parks, recreational areas and trails;

b. to the extent feasible and accounting for the goal of protecting the built environment, enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;

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

d. encourage innovative approaches to sea level rise adaptation;

e. identify a framework for integrating the adaptation responses of multiple government agencies;

f. integrate regional mitigation measures designed to reduce greenhouse gas emission with regional adaptation measures designed to address the unavoidable impacts of climate change;

g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;

h. address any existing contamination and the implications of the contamination on water quality;

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

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

k. identify mechanism to provide information, tools, and financial resources so local government can integrate regional climate change adaptation planning into local community design processes.

<p><u>6. Until a regional sea level rise adaptation strategy can be completed, whenever and to the extent the McAteer-Petris Act authorizes the Commission to consider any sea level rise related issue as part of its evaluation of new development projects requiring a permit from the Commission, the Commission should undertake its analysis on a case-by-case basis, with emphasis placed on the presence of the project characteristics listed below. These policies have no advisory, legal or regulatory effect on other governmental authorities and have no effect on activities proposed outside the Commission's permit jurisdiction, including when conducting CEQA review or a consistency determination under the Coastal Zone Management Act.</u></p>
<p><u>a. repairs of existing facilities or small projects that do not increase risks to public safety;</u></p>
<p><u>b. transportation facilities, public utilities or other critical infrastructure that is necessary for existing and appropriately planned future development;</u></p>
<p><u>c. Development or redevelopment that provides significant regional benefits and meets regional goals, or infill development that includes the following elements: (i) an adaptation strategy for dealing with sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures that will enhance project resilience and sustainability; (iii) if a publicly financed regional protection strategy is not planned or is not being developed for the location of the project, a financial strategy that addresses the potential cost of protecting the project from any storm damage due to sea level rise in the future, except to the extent the general public will also benefit from the adaptation strategies or sea protection measures;</u></p>
<p><u>d. redevelopment that will remediate existing environmental degradation or contamination particularly on closed military bases, or development that will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures designed to achieve resilience and sustainability throughout the project; (iii) if a publicly financed regional protection strategy is not planned or is not being developed for the location of the project, a permanent financial strategy that will to the maximum extent practicable ensure the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future, except to the extent the general public will also benefit from the adaptation strategies or sea protection measures; (Proposed Amendments, pg. 18, para. 6, subd. d.)</u></p>
<p><u>e. projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require additional shoreline protection during the life of the project beyond those flood mitigation strategies that are proposed as part of the project; and</u></p>
<p><u>f. public parks, natural resource restoration or environmental enhancement projects.</u></p>
<p>Safety of Fills – Findings</p>
<p><u>f. Flood damage to fills and shoreline areas can result from a combination of 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 effective approaches that can reduce flood damage include protecting structures or areas with levees, of an adequate height seawalls, tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time. (Proposed Amendments, pg. 19, para. f.)</u></p>
<p><u>g. Bay waer 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) ladm elevation change (lifting and subsidence) around the Bay. If historic trends continue,</u></p>

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 peaks. Sea level is rising at an accelerated rate due to global climate change. 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. 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. 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 around seven feet since 1912) could subside up to seven feet more; if this Where subsidence occurs, more extensive levees shoreline protection and wetland restoration projects may be needed to minimize prevent inundation flooding of low-lying areas by the extreme high water level. (Proposed Amendments, pp. 19-20, para. g.)

Safety of Fills – Policies

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 Geological~~ Survey, for purposes of data comparison and evaluation.

4. Adequate measures should be provided ~~To prevent damage from sea level rise and storm activity flooding, that may occur structures on fill or near the shoreline over the expected life of a project. 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 projects. Except for priority use areas, 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 .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. Within priority use areas, new projects on fill that cannot meet these design criteria may propose alternative measures to address future sea level rise and storm activity, including but not limited to other engineered solutions such as levees or seawalls. 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.~~

5. 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.

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.

Protection of the Shoreline Protection – Findings

<p>a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.</p>
<p>a- b. Erosion control 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>Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.</u></p>
<p>b- c. Most erosion control 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. <u>Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts. Physical and visual public access can be provided on levees and other protection structures. 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>e- d. Structural <u>Shoreline protection structures, such as riprap and sea walls, are is most effective and less damaging to natural resources if they are it is the appropriate kind of structure for the project site and erosion and flood problem, and are is properly designed, constructed, and maintained. Because factors affecting erosion and flooding 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 site characteristics, flood conditions of and the 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.</u></p>
<p>e. 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. <u>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>d- f. Nonstructural erosion control <u>shoreline protection methods, such as tidal marshes, marsh plantings, can provide effective flood control but are typically effective for erosion control only in areas experiencing mild erosion. However, in some instances, it may be possible to combine marsh habitat restoration with structural approaches to provide protection from flooding and control shoreline erosion, thereby minimizing the erosion control shoreline protection project's impact on natural resources.</u></p>
<p>e- g. Loose dirt, concrete slabs, asphalt, bricks, scrap wood and other kinds of debris, are generally ineffective in halting shoreline erosion or preventing flooding 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>Protection of the Shoreline Protection – Policies</p>
<p>1. New shoreline erosion control protection projects and the maintenance or reconstruction of existing erosion control facilities projects should be authorized if: (a) the project is necessary to protect existing or appropriately planned the shoreline development from flooding or erosion; (b) the type of the protective structure is appropriate for the project site, <u>the uses to be protected,</u> and the erosion and flooding conditions at the site; and (c) the project is properly <u>engineered to provide erosion control and flood protection for 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 <u>current or planned adjacent shoreline protection measures.</u> Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion control projects.</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 quarrystone or concrete pieces that have either been specially cast, are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability, and freedom of extraneous materials from demolition debris will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.

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 and flooding and that the effects of the ~~erosion control~~ shoreline protection project on natural resources during the life of the project will be the minimum necessary.

4. Shoreline ~~protection~~ protection 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 ~~protection~~ protection projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.

5. Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where such significant impacts cannot be avoided, mitigation or alternative public access should be provided.

Public Access -- Findings

f. 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.

~~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. 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).

~~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. 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.

~~l.~~ 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 and the likely human uses of the site, and the potential impacts of future sea level rise climate change.

Public Access – Policies
<u>5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.</u>
5. <u>6.</u> 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.

Consensus Draft Proposed Climate Change Amendments to Bay Plan

Jan. 12, 2011

[Marked against Sept. 3, 2010 staff version of proposed Bay Plan amendments]

Guide to Markup:

Normal text = existing Bay Plan language

Underlined text = proposed additions to Bay Plan by BCDC, Sept. 3, 2010 version

~~Strikethrough text~~ = proposed deletions from the Bay Plan by BCDC, Sept. 3, 2010 version

Italics text = proposed additions to the Sept. 3, 2010 version

~~Double-strikethrough text~~ = proposed deletions from the Sept. 3, 2010 version

Y= Proposed change to section text

N= No proposed change to section text

The Commission finds and declares that the Amendments to the Bay Plan adopted pursuant to San Francisco Bay Plan Amendment No. ____:

- (1) *Shall apply solely to projects and activities within the Commission's jurisdiction, as defined by the McAteer-Petris Act at Government Code § 66610) and the Suisun Marsh Preservation Act of 1977 at Public Resources Code § 29101, ("Permit Jurisdiction"), that require either (a) a permit from the Commission pursuant to its authority under the McAteer-Petris Act or the Suisun Marsh Preservation Act of 1977, or (b) requiring a consistency determination under the Coastal Zone Management Act;*
- (2) *Shall not apply to any project or activity located outside the Permit Jurisdiction, even if such project or activity is asserted to affect areas within the Permit Jurisdiction. For projects or activities that are located partly within the Permit Jurisdiction and partly outside such area, the Amendments shall apply only to those activities or that portion of the project within the Permit Jurisdiction.*
- (3) *To the maximum extent permitted by law, shall not be construed as enforceable policies or in the nature of recommendations under the Coastal Zone Management Act; and*
- (4) *To the maximum extent permitted by law, shall not be considered part of an "applicable plan" adopted by the Commission for purposes of the California Environmental Quality Act (CEQA), and therefore shall not require a discussion whether a proposed project or activity is inconsistent with these Bay Plan Amendments.*

Any project or activity for which an application for a Commission permit is deemed complete before _____, shall be subject to the Bay Plan policies in effect as of _____.

Projects or activities undertaken in the future within the scope of an existing permit for a phased development shall be governed exclusively by the terms of the existing permit, and shall not be subject to any Bay Plan policies adopted subsequent to the approval of the permit.

Findings / Policies	Change?
Tidal Marshes and Tidal Flats – Findings	
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. <u>These recommendations were based on conditions of tidal inundation, salinity, and sedimentation of 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 targets for types, amounts and distribution of habitats.</u>	N

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<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>N</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. Marshes trap sediment and contribute additional material to the marsh plain as decaying plant matter accumulates. 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>N</p>
<p>k. l. <u>Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. However, Scientists studying the Bay estimate observed that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to declines in the volume of sediment entering the Bay annually 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 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>N</p>
<p>m. <u>Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution and amount of sediment available to sustain and restore wetlands. 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 for wetlands.</u></p>	<p>N</p>
<p>n. <u>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 tidal habitats to move landward. Buffer areas may be critical important 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 targets. (Proposed Amendments, pg. 5, para. n.)</u></p>	<p>Y</p>
<p>l. o. [renumbered but no proposed changes] (Proposed Amendments, pg. 7, para. o.)</p>	<p>n/a</p>
<p>m. p. [renumbered but no proposed changes] (Proposed Amendments, pg. 6, para. p.)</p>	<p>n/a</p>
<p></p>	<p></p>
<p>Tidal Marshes and Tidal Flats – Policies</p>	<p></p>
<p></p>	<p></p>

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<p>4. Where and whenever possible <u>feasible</u>, former tidal marshes and tidal flats that have been diked from the Bay should be considered for (i) restoration restored to tidal action in order to replace lost historic wetlands and/or should be managed <u>(ii) management in a manner so as 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 to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management efforts that result in a Bay ecosystem resilient to climate change and sea level rise. Further, local government land use and tax policies should not lead to the conversion of those restorable lands to uses that would preclude or deter potential restoration. The public agencies should make every reasonable efforts to acquire these lands from willing sellers for the purpose of habitat restoration and wetland migration.</u> (Proposed Amendments, pp.6- 7, para. 4.)</p>	<p>Y</p>
<p>5. The commission should support comprehensive Bay sediment research and monitoring to understand sediment processes necessary to sustain and restore wetlands. <u>Monitoring methods should be updated periodically based on current scientific information.</u> (Proposed Amendments, pg. 7, para. 5.)</p>	<p>N</p>
<p>5-6. Any <u>ecosystem tidal</u> 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 relative how <u>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 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; and (j) site characterization. If success criteria are not met, appropriate corrective adaptive measures should be taken.</u></p>	<p>N</p>
<p>Climate Change – Findings</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." Human activities since industrialization have increased the emissions of greenhouse gases through the burning of fossil fuels. The accumulation of these gases in the atmosphere is causing the planet to warm at an accelerated rate.</u> (Proposed Amendments, pg. 8, para. a.)</p>	<p>N</p>
<p>b. The future extent of global warming is uncertain. It will be driven largely by future greenhouse gas emission levels, which will depend on how global development proceeds. The United Nations Intergovernmental Panel on Climate Change (IPCC) developed a series of global development scenarios and greenhouse gas emissions scenarios for each development scenario. <u>While these emissions scenarios have been used in global models to develop projections of future climate, including global surface temperature and precipitation changes, scientific uncertainty remains regarding the pace and amount of sea level rise. As additional data are collected and analyzed, projections of future climate changes, including sea level rise projections, will continue to change. The National Academy of Sciences is in the process of developing a Sea Level Rise Assessment Report that will address potential impacts of sea level rise on coastal areas throughout the United States, including California and the Bay Area.</u> (Proposed Amendments, pg. 8, para. b.)</p>	<p>Y</p>

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<p>c. <u>Global surface temperature increases are accelerating the rate of sea level rise worldwide through thermal expansion of ocean waters and melting of land-based ice (e.g., ice sheets and glaciers). Bay water level is likely to rise by a corresponding amount. In the last century, sea level in the Bay rose nearly eight inches. Current science-based projections of global sea level rise over the next century vary widely. As new information on climate change becomes available and factors that have regional effects on sea level rise, such as the Pacific Decadal Oscillation, are better understood, future sea level rise projections are likely to change. Using IPCC greenhouse gas emission scenarios, the California Climate Action Team developed sea level rise projections (relative to sea level in 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 inches at the end of the century. The Coastal and Ocean Resources Working Group of the Climate Action Team has recognized that it may not be appropriate to set a firm value for sea level rise projections and that, based on a variety of factors, agencies may determine to use different sea level rise projections. Although these IPCC values are currently generally recognized as the best science-based sea level rise projections for California, recent observations of global greenhouse gas emission show higher trajectories than the IPCC's most intensive emissions scenario as mentioned above, sea level rise projections will change over time. Moreover, melting of the Greenland and Antarctic ice sheets is not may not be currently well reflected in sea level rise projections. Sea level rise projections will change over time. Therefore, to minimize, it is prudent to rely on a range higher projections in the range of possible future sea level rise.</u></p>	<p>Y</p>
<p>d. <u>Climate change will alter key factors that contribute to shoreline flooding, including sea level and storm frequency and intensity. During a storm, low air pressure can cause storm surge (a rapid rise in water level) and increased wind and wave activity can cause wave run up, which will be higher as sea level rises. These storm events can be exacerbated by El Nino events, which generally result in persistent low air pressure, greater rainfall, high winds and higher sea level. The coincidence of intense winter storms, extreme high tides, and high runoff, in combination with higher sea level, will increase the frequency and duration of shoreline flooding long before areas are permanently inundated by sea level rise alone.</u></p>	<p>N</p>
<p>e. <u>Shoreline areas currently vulnerable to a 100-year flood event may be subjected to inundation by high tides at mid-century. Much of the developed shoreline may require new or upgraded shoreline protection to reduce damage from flooding. Shoreline areas that have subsided are especially vulnerable to sea level rise and may require more extensive shoreline protection. The Commission, along with other agencies such as the National Oceanic and Atmospheric Agency, the Federal Emergency Management agency, the United States Army Corps of Engineers, cities, counties, and flood control districts, is responsible for protecting the public and the Bay ecosystem from flood hazards. This can be best achieved by using a range of scientifically based scenarios higher emission scenarios, including projections which correspond to higher rates of sea level rise. In planning and designing projects for the Bay shoreline, it is prudent to rely on the most current science-based and regionally specific projections of future sea level rise, develop strategies and policies that can accommodate sea level rise over a specific planning horizon (i.e., adaptive management strategies), and preclude thoroughly analyze new development to determine whether it can that cannot be adapted to sea level rise.</u></p>	<p>Y</p>

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<p>f. <u>Natural systems and human communities are considered to be resilient when they can absorb and rebound from the impacts of weather extremes or climate change and continue functioning without substantial outside assistance. Systems that are currently under stress often have lower adaptive capacity and may be more vulnerable or susceptible to harm from climate change impacts. Human communities with adaptive capacity can adjust to climate change impacts by taking actions to reduce the potential damages, taking advantage of new opportunities arising from climate change, and accommodating the impacts. Understanding vulnerabilities to climate change is essential for assessing climate change risks to a project, the Bay or the shoreline. Risk is a function of the likelihood of an impact occurring and the consequence of that impact. Climate change risk assessments identify and prioritize issues that can be addressed by adaptation strategies.</u></p>	<p>N</p>
<p>g. <u>In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation refers to actions taken to address potential or experienced impacts of climate change that reduce risks. Adaptation actions that protect existing and newly constructed development and infrastructure can include relocating structures out of flood and inundation zones, protecting shorelines, promoting appropriate infill development, and designing new construction to be resilient to sea level rise. Other options include relocating out of flood and inundation zones structures not necessary for serving communities. Some actions can integrate adaptation and mitigation strategies, such as restoring tidal marshes that both sequester carbon and provide flood protection. Adaptation and mitigation measures that are implemented before sea level rises may be cost effective and may protect lives, property and ecosystems. Identifying appropriate adaptation strategies requires complex policy considerations. Implementing many adaptation strategies will require action and funding by federal, state, regional and local agencies with planning, funding and land use decision-making authority beyond the Commission's jurisdiction.</u></p>	<p>Y</p>
<p>h. <u>In the context of sea level rise adaptation, it is likely that myriad innovative approaches will emerge, likely including financing mechanisms to spread equitably the costs of protection from sea level rise, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risks and impacts to critical infrastructure; maximize compatibility with and integration of natural processes; are resilient over a range of sea levels, potential flooding impacts and storm intensities; and are adaptively managed. Developing innovative adaptation approaches will require financial resources, testing and refinement to ensure that they effectively protect the Bay ecosystem and public safety before they are implemented on a large scale. Developing the right mix of approaches would best be accomplished through a comprehensive regional adaptation strategy developed through a process involving various stakeholders and local, regional, state and federal agencies. (Proposed Amendments, pg. 10, para. h.)</u></p>	<p>Y</p>
<p>i. <u>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. Effective adaptive management requires setting clear and measurable objectives, collecting data, reviewing current scientific observations, monitoring the results of policy implementation or management actions, and integrating this information into future actions. (Proposed Amendments, pg. 11, para. i.)</u></p>	<p>N</p>
<p>j. <u>The principle of sustainability embodies values of equity, environmental and public health protection, economic vitality and safety. The goal of sustainability is to conduct human endeavors in a manner that will avoid depleting natural resources for future generations and producing no more than can be assimilated through natural processes, while providing for improvement of the human condition for all the people of the world. Efforts to improve the sustainability of natural systems and human communities can improve their resilience to climate change by increasing their adaptive capacity. (Proposed Amendments, pg. 11, para. j.)</u></p>	<p>Y</p>

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<p>k. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, are <i>may be, or may become</i>, 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 and facilities, such as airports, ports, regional transportation facilities, landfills, contaminated lands and wastewater treatment facilities are at risk of flood damage that could require costly repairs, or result in the interruption or loss of vital services or degraded water quality. A current lack of funding to address projected impacts from sea level rise necessitates a collaborative approach with all stakeholder groups to find strategic and innovative solutions to advance will limit the Bay Area's ability to meet environmental, public health, equity and economic goals.</p>	<p>Y</p>
<p>l. Waterfront parks, beaches, public access sites, and the Bay Trail are particularly vulnerable to flooding from sea level rise and storm activity because they are located immediately adjacent to the Bay. Flooding of, or damage to these areas would adversely affect the region's quality of life, if important public spaces and recreational opportunities are lost. (Proposed Amendments, pg. 12, para. l.)</p>	<p>N</p>
<p>m. The Bay ecosystem contains diverse and unique plants and animals and provides many benefits to humans. For example, tidal wetlands may provide critical important flood protection, improve water quality, and sequester carbon. Tidal high marsh and adjacent ecotones are essential to many tidal marsh species including endangered species. The Bay 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 ecosystem by inundating or eroding wetlands and ecotones, changing sediment dynamics, altering species composition, raising the acidity of Bay waters, changing freshwater inflow or salinity, altering the food web, and impairing water quality, all of which may overwhelm impair the system's ability to rebound and continue functioning. Moreover, further loss of tidal wetland will increase the risk of shoreline flooding. (Proposed Amendments, pg. 12, para. m.)</p>	<p>Y</p>
<p>n. Some Bay Area residents communities, particularly those with low incomes or disabilities and the elderly, may lack the resources or capacity to respond effectively to the impacts of sea level rise and storm activity. Financial and other assistance is needed to achieve regional equity goals and help everyone be part of resilient shoreline communities. (Proposed Amendments, pg. 12, para. n.)</p>	<p>Y</p>
<p>o. Approaches for ensuring public safety in developed vulnerable shoreline areas <i>through adaptive management strategies include but are not limited to:</i> (1) protecting existing and planned appropriate infill development; (2) accommodating flooding by building or renovating structures or infrastructure systems that are resilient or adaptable over time; (3) discouraging permanent new development when adaptive management strategies cannot protect public safety; (4) allowing only interim new uses that can be removed or phased out if adaptive management strategies are not available as inundation threats increase; and (5) over time and where feasible and appropriate, removing existing development where public safety cannot otherwise be ensured. Determining the appropriate approach and financing structure requires the weighing of various policies and is best done through a collaborative approach that directly involves the affected communities and other governmental agencies with authority or jurisdiction. Some adaptive management strategies may require action and financing on the regional or sub-regional level across jurisdictions.</p>	<p>Y</p>

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<p>p. Infill development is building homes, businesses and/or public facilities and infrastructure on vacant, underutilized and/or environmentally degraded lands within existing urban areas that are served by existing or planned transit and transportation infrastructure. Infill development includes the conversion of former military bases and adjacent property to job-producing or other productive uses and the adaptive reuse of existing structures. Infill development has been identified in state law as an important strategy for reducing greenhouse gas emissions. To further this policy objective, the Association of Bay Area Governments and the Metropolitan Transportation Commission initiated the FOCUS program to develop a regional development strategy that promotes a more compact Bay Area land use pattern. In consultation with local governments, the FOCUS program identified priority development areas for infill development in the Bay Area. These priority development areas are anticipated to be key components of the Bay Area's Sustainable Communities Strategy that will be adopted and periodically updated pursuant to SB 375. One of the Commission's objectives in adopting these sea level rise policies is to facilitate implementation of the Sustainable Communities Strategy. the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructure is in place and that is surrounded by existing development that either is or will be served by transit. Infill development has been identified as an important strategy for reducing greenhouse gas emissions in the Bay Area by providing jobs and housing in locations and at densities that can be served by transit. Some vulnerable shoreline areas are already improved with public infrastructure and private development that has regionally significant economic, cultural or social value, and can accommodate infill development.</p>	<p>Y</p>
<p>g. When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as minor repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.</p>	<p>Y</p>
<p>qf. In some cases, the regional goals of encouraging infill development, remediating environmentally degraded land, redeveloping closed military bases and concentrating housing and job density near transit may conflict with the goal of minimizing flood risk by avoiding development in low-lying areas vulnerable to flooding. Methods to minimize this conflict, include, but are not limited to: clustering infill or redevelopment in low-lying areas can be clustered on a portion of the property to reduce the area that must be protected; formulating an adaptation strategy for dealing with rising sea level and shoreline flooding can be formulated with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; incorporating measures can be incorporated that will enhance project achieve resilience and sustainability in all elements of the project; and developing a and a permanent project-based financial strategy can be developed to guarantee that the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future and/or a public financing strategy, as appropriate, to fund future flood protection for the project, which may also include existing nearby development. Reconciling these different worthy goals and taking appropriate action requires weighing competing policy considerations and would be best accomplished through a collaborative process involving diverse stakeholders, similar to that being undertaken by the Joint Policy Committee to develop the Sustainable Communities Strategy.</p>	<p>Y</p>
<p>re. Some undeveloped low-lying areas that are vulnerable to shoreline flooding contain critical important habitat or provide opportunities for habitat enhancement. Allowing Proposals for development in these areas should preclude important be evaluated to assess their potential for habitat enhancement opportunities, their potential to address the region's needs for appropriate infill development, regional benefits, and greenhouse gas reduction. Some developed areas may be suitable for ecosystem restoration if existing development is removed to allow the Bay to migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods. (Proposed Amendments, pg. 14, para. s.)</p>	<p>Y</p>

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<p>st. 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 with local governments, including agencies with responsibility for flood protection, is desirable to <u>optimize scarce resources and create the flexibility needed to plan amidst a high degree of uncertainty.</u></p>	<p>Y</p>
<p>te. Government jurisdictional boundaries and authorities in the Bay Area are incongruent with the regional scale and nature of climate-related challenges. The Joint Policy Committee, which is comprised of regional agencies, provides a framework for regional decision-making to address climate change through consistent and effective regionwide policy and to provide local governments with assistance and incentives for addressing climate change. <u>The Commission will work through the Joint Policy Committee to harmonize Bay Plan Climate Change policies with the emerging SCS and update the Bay Plan if necessary to ensure that appropriate infill projects are encouraged.</u></p>	<p>Y</p>
<p>uw. 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, local governments, and other governmental agencies that have broader authority over the use and development of areas that are vulnerable to inundation.</p> <p><i>The Commission's legal authority and regulatory jurisdiction were created for the purposes of allowing the Commission to advance the State goals of preventing unnecessary filling of the Bay and increasing public access to the Bay shoreline. To effectuate those goals, the Commission's permitting jurisdiction is limited, as described in the McAteer-Petris Act at Government Code § 66610 and the Suisun Marsh Preservation Act of 1977 ("permit jurisdiction"). Recognizing this limited legal authority and regulatory jurisdiction, it is the intent of the Commission that the climate change policies shall:</i></p> <ul style="list-style-type: none"> <i>(1) apply solely to projects and activities within the Commission's permit jurisdiction that require either (a) a permit from the Commission pursuant to its authority under the McAteer-Petris Act or the Suisun Marsh Preservation Act of 1977, or (b) a consistency determination under the Coastal Zone Management Act;</i> <i>(2) not apply to any project or activity located outside the permit jurisdiction, even if such project or activity is asserted to affect areas within the permit jurisdiction. For projects or activities that are located partly within the permit jurisdiction and partly outside such area, the policies shall apply only to those activities or that portion of the project within the permit jurisdiction.</i> <i>(3) to the maximum extent permitted by law, not be construed as enforceable policies or in the nature of recommendations under the Coastal Zone Management Act; and</i> <i>(4) to the maximum extent permitted by law, not be considered part of an "applicable plan" adopted by the Commission for purposes of the California Environmental Quality Act (CEQA), and therefore shall not require a discussion whether a proposed project or activity is inconsistent with these policies.</i> 	<p>Y</p>
<p>Climate Change – Policies</p>	

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<p>1. When planning <u>Shoreline area planning, and e-</u> or designing larger shoreline projects, <u>should include preparation of a risk assessment should be prepared, based on the estimated 100-year flood elevations that take the currently available best estimates of future sea level rise and current or planned flood protection into account. A range of sea level rise projections for mid-century and end of century, including at least one high estimate, that is based on the best scientific data science-based projections currently available, should be used in the risk assessment. Inundation maps should be prepared under the direction of a coastal engineer.</u></p>	<p>Y</p>
<p>2. To protect public safety and ecosystem services, within areas <u>which an appropriate risk assessment determines are vulnerable to future shoreline flooding that threatens public safety, all projects – other than minor repairs to existing facilities, small projects that do not increase risks to public safety, interim projects and infill projects within existing urbanized areas that likely will be protected whether or not the infill takes place – should be designed to be resilient to a mid-century sea level rise projection based upon a risk assessment conducted for the project by a qualified engineer. If it is likely the project will remain in place longer than mid-century, and adaptive management plan should be developed to address the long term impacts that will arise based on a risk assessment using the best available science-based projection for sea level rise at the end of the century.</u></p>	<p>Y</p>
<p>3. <u>To the extent feasible, undeveloped, vulnerable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement should be evaluated relative to their potential to address competing concerns relating to infill development, regional benefits, potential for habitat enhancement opportunities, and greenhouse gas reduction preserved, enhanced or permanently protected to allow for the inland migration of Bay habitat as sea level rises and to address the adverse environmental impacts of climate change. This evaluation process depends on identifying and balancing competing concerns and should be undertaken in conjunction with the development of the regional adaptation strategy described in Climate Change Policy 5. (Proposed Amendments, pg. 15, para. 3.)</u></p>	<p>Y</p>
<p>4. <u>Whenever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.</u></p>	<p>N</p>

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<p>5. <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 sea level rise adaptation strategy for protecting critical developed shoreline areas and natural ecosystems, enhancing the resilience of Bay and shoreline systems and increasing their adaptive capacity.</u></p> <p><i>The Commission recommends that: (i) the strategy should incorporate an adaptive management approach; (ii) <u>the strategy be consistent with the SCS adopted and updated pursuant to SB 375; (iii) the strategy be updated regularly to reflect changing conditions and information, and include maps of shoreline areas that are vulnerable to flooding based on projections of future sea level rise and shoreline flooding; (iv) the maps should be prepared under the direction of a coastal engineer and should be regularly updated in consultation with government agencies with authority over flood protection; and (v) particular attention should be given to identifying and encouraging the development of long-term regional flood protection strategies that may be beyond the fiscal resources of individual local governments.</u></i></p> <p><i>Ideally, the regional strategy will <u>should</u> determine where and how existing development should be protected and infill development encouraged, where new development should be permitted, and where existing development should eventually be removed to allow the Bay to migrate inland.</i></p> <p>The goals of the strategy should be to <i>The entities that formulate the regional strategy are encouraged to consider the following strategies and goals:</i></p>	<p>Y</p>
<p><u>a. advance regional public safety and economic prosperity by protecting most existing and appropriately planned shoreline development to the maximum extent feasible, especially development that provides regionally significant benefits, and by protecting infrastructure that is crucial to public health or the region's economy, such as airports, ports, regional transportation, wastewater treatment facilities, major parks, recreational areas and trails;</u></p>	<p>Y</p>
<p><u>b. to the extent feasible and accounting for the goal of protecting the built environment, enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landward; assuring adequate volumes of sediment for marsh accretion; identifying priority conservation areas that should be considered for acquisition, preservation or enhancement; developing and planning for flood protection; and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlands;</u></p>	<p>Y</p>
<p><u>c. integrate the protection of existing and future shoreline development with the enhancement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion prevention;</u></p>	<p>N</p>
<p><u>d. encourage innovative approaches to sea level rise adaptation;</u></p>	<p>N</p>
<p><u>e. Identify a framework for integrating the adaptation responses of multiple government agencies;</u></p>	<p>N</p>
<p><u>f. integrate regional mitigation measures designed to reduce greenhouse gas emission with regional adaptation measures designed to address the unavoidable impacts of climate change;</u></p>	<p>N</p>
<p><u>g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;</u></p>	<p>N</p>
<p><u>h. address any existing contamination and the implications of the contamination on water quality;</u></p>	<p>N</p>

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<p>i. <u>support research that provides information useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding;</u></p>	<p>N</p>
<p>j. <u>identify actions to prepare and implement the strategy, including any needed changes in law; and</u></p>	<p>N</p>
<p>k. <u>identify mechanism to provide information, tools, and financial resources so local government can integrate regional climate change adaptation planning into local community design processes.</u></p>	<p>N</p>
<p>6. <u>Until a regional sea level rise adaptation strategy can be completed, whenever and to the extent the McAteer-Petris Act authorizes the Commission to consider any sea level rise related issue as part of its evaluation of new development projects requiring a permit from the Commission, the Commission should undertake its analysis on a case-by-case basis, with emphasis placed on the presence of the project characteristics listed below. These policies have no advisory, legal or regulatory effect on other governmental authorities and have no effect on activities proposed outside the Commission's permit jurisdiction, including when conducting CEQA review or a consistency determination under the Coastal Zone Management Act. when planning or regulating new development in areas vulnerable to future shoreline flooding new projects should be limited to:</u></p>	<p>Y</p>
<p>a. minor <u>repairs of existing facilities or small projects that do not increase risks to public safety;</u></p>	<p>Y</p>
<p>b. <u>transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existing and appropriately planned future development;</u></p>	<p>Y</p>
<p>c. <u>Development or redevelopment that provides significant regional benefits and meets regional goals, or infill development that includes the following elements: (i) an adaptation strategy for dealing with sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures that will enhance project resilience and sustainability; (iii) if a publicly financed regional protection strategy is not planned or is not being developed for the location of the project, a financial strategy that addresses the potential cost of protecting the project from any storm damage due to sea level rise in the future, except to the extent the general public will also benefit from the adaptation strategies or sea protection measures; or (1) within existing urbanized areas that contain development and infrastructure of such high value that the areas will likely be protected whether or not the infill takes place;</u></p>	<p>Y</p>
<p>d. <u>redevelopment that will remediate existing environmental degradation or contamination particularly on closed military bases, or if the redevelopment that will (1) provide significant regional benefits and meet regional goals by concentrating employment or housing near adequate transit service sufficient to serve the project, and (2) include the following elements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressing key uncertainties for the life of the project; (ii) measures designed to that will achieve resilience and sustainability in all elements of throughout the project; (iii) if a publicly financed regional protection strategy is not planned or is not being developed for the location of the project, a permanent financial strategy that will to the maximum extent practicable ensure guarantee the general public will not be burdened with the cost of protecting the project from any sea level rise or storm damage in the future, except to the extent the general public will also benefit from the adaptation strategies or sea protection measures; or (Proposed Amendments, pg. 18, para. 6, subd. d.)</u></p>	<p>Y</p>

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<p>e. <u>projects or uses that are interim or temporary in nature where the use or structures: (1) can be easily removed or relocated to higher ground; (2) can be amortized within a period before removal or relocation of the proposed use is required; and (3) will not require additional shoreline protection during the life of the project beyond those flood mitigation strategies that are proposed as part of the project; and</u></p>	<p>Y</p>
<p>f. <u>public parks, natural resource restoration or environmental enhancement projects.</u></p>	<p>N</p>
<p>7. <u>To effectively address sea level rise and flooding, if more than one government agency has authority or jurisdiction over a particular issue or area, project reviews should be coordinated to resolve conflicting guidelines, standards or conditions.</u></p>	<p>N</p>
<p>Safety of Fills -- Findings</p>	
<p>f. <u>Flood damage to fills and shoreline areas can result from a combination of 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 effective approaches that can reduce flood damage include protecting structures or areas with levees, of an adequate height seawalls, tidal marshes, or other protective measures, employing innovative design concepts, such as building structures that can be easily relocated, tolerate periodic flooding or are adaptively designed and managed to address sea level rise over time. (Proposed Amendments, pg. 19, para. f.)</u></p>	<p>Y</p>
<p>g. <u>Bay waer 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 and 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 peaks. Sea level is rising at an accelerated rate due to global climate change. 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. 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. 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 are 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 around seven feet since 1912) could subside up to seven feet more; if this Where subsidence occurs, more extensive levees shoreline protection and wetland restoration projects may be needed to minimize prevent inundation flooding of low-lying areas by the extreme high water level. (Proposed Amendments, pp. 19-20, para. g.)</u></p>	<p>N</p>
<p>Safety of Fills – Policies</p>	

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<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 Geological Survey, for purposes of data comparison and evaluation.</p>	<p>N</p>
<p>4. Adequate measures should be provided To prevent damage from sea level rise and storm activity flooding, that may occur structures on fill or near the shoreline over the expected life of a project. 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 projects. Except for priority use areas, 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 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. Within priority use areas, new projects on fill that cannot meet these design criteria may propose alternative measures to address future sea level rise and storm activity, including but not limited to other engineered solutions such as levees or seawalls. 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>Y</p>
<p>5. 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.</p>	<p>N</p>
<p>6. Local governments and special districts with responsibilities for flood protection should assure that their requirements and criteria reflect address future relative sea level rise and should assure that new structures and uses attracting people are not approved in current or future flood prone areas, or in areas that will become flood prone in the future, and that structures and uses that are approved/approvable will be built at stable elevations to assure long term protection from flood hazards/shoreline flooding.</p>	<p>Y</p>
<p>Protection of the Shoreline Protection – Findings</p>	
<p>a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.</p>	<p>N</p>
<p>a- b. Erosion control 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 Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.</p>	<p>Y</p>

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<p>b. c. Most erosion control structural shoreline protection projects involve some fill which can adversely affect natural resources such as water surface area and volume, tidal circulation, <u>and wildlife use, marshes, and mudflats.</u> Structural shoreline protection can further cause erosion of tidal wetlands and tidal flats, <u>prevent wetland migration to accommodate sea level rise, create a barrier to physical and visual public access to the Bay, create a false sense of security and may have cumulative impacts.</u> Physical and visual public access can be provided on levees and other protection structures. <u>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.</u> Some projects may involve extensive amounts of fill.</p>	<p>N</p>
<p>e. d. Structural shoreline protection structures, such as riprap and sea walls, are <u>is</u> 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 and flood problem, and are <u>is</u> properly designed, constructed, and maintained. Because factors affecting erosion and flooding 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 site characteristics, flood conditions of and the 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>N</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>N</p>
<p>d.f. Nonstructural erosion control <u>shoreline protection</u> methods, such as tidal marshes <u>marsh plantings,</u> can provide effective flood control but are typically effective for erosion control 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 provide protection from flooding and control shoreline erosion, thereby minimizing the erosion control shoreline protection project's impact on natural resources.</p>	<p>N</p>
<p>e. g. Loose dirt, concrete slabs, asphalt, bricks, scrap wood and other kinds of debris, are generally ineffective in halting shoreline erosion or preventing flooding 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>N</p>
<p>Protection of the Shoreline Protection – Policies</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 <u>existing, or appropriately planned</u> the shoreline <u>development from flooding or erosion</u>; (b) the type of the protective structure is appropriate for the project site, <u>the uses to be protected,</u> and the erosion and flooding conditions at the site; and (c) the project is properly engineered to provide erosion control and flood protection for flood event that takes future sea level rise into account; (d) <u>the project is properly designed and constructed to prevent significant impediments to physical and visual public access;</u> and (e) <u>the protection is integrated with current or planned adjacent shoreline protection measures.</u> Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion control projects.</p>	<p>Y</p>

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<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 quarystone or concrete pieces that have either been specially cast, <u>are free of extraneous materials from demolition debris, and are carefully selected for size, density, and durability, and freedom of extraneous materials from demolition debris</u> will meet these requirements. Riprap revetments constructed out of other debris materials should not be authorized.</p>	<p>N</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>N</p>
<p>4. Shoreline protective <u>protection</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>protection</u> projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.</p>	<p>N</p>
<p>5. <u>Adverse impacts to natural resources and public access from new shoreline protection should be avoided. Where such significant impacts cannot be avoided, mitigation or alternative public access should be provided.</u></p>	<p>N</p>
<p>Public Access – Findings</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>Y</p>
<p>h. <u>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. 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>N</p>
<p>k. <u>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. 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>N</p>

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<p>l. 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 and the likely human uses of the site, and the potential impacts of future sea level rise climate change.</p>	<p>N</p>
<p>Public Access – Policies</p>	
<p>5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.</p>	<p>N</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.</p>	<p>N</p>