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President/CEO

Feb. 2011

To: Bay Area Conservation and Development Commission

From: The Fairfield- Suisun Chamber of Commerce

Re: Amending the San Francisco Bay Plan to address sea level rise

CC: ABAG, SACOG, SJCOG, MTC, BAY AREA QUALITY MANAGEMENT DISTRICT, BCDC, DELTA STEWARDSHIP COUNCIL, DELTA PROTECTION COMMISSION, COASTAL COMMISSION, all Cities in Counties of Marlon, Sonoma, Napa, Solano, Alameda, Contra Costa, and Santa Clara

The Fairfield-Suisun Chamber of Commerce Business Issues Committee along with the Chamber Board of Directors has reviewed and discussed the proposed changes to the San Francisco Bay Plan.

the Chamber of Commerce Board of Directors is concerned with any disincentives that will impact their economic development.

The Chamber of Commerce is sending the message by requesting that Bene not act alone to propose additional land use regulation. Instead, we ask that you work in concert with MTC, ABAG, and BAAQMD, within the framework ofthe Sustainable Community Strategy, to address climate and sea level rise as part of an overall regional scenario.

Fairfield-Suisun Chamber of Commerce
Mailing Address: 1111 Webster Street· Fahiield. CA 94533-4814' Tele: 707.425.4625 • Fax: 707.425.0826
Web Address: www.ffsc-chamber.com

Real Estate Development
Commercial – Residential – Mixed-Use

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

Dear Dr. Randolph:

Main Street West Partners is a privately-owned real estate development company having strong ties to the City of Suisun City and its community. To date, the company and its principals are responsible for the investment and development of numerous commercial and residential projects in the historic Waterfront District helping to transform a small portion of the Suisun waterfront from an underutilized, polluted and blighted industrial area into a quaint, vibrant, mixed-use waterfront community.

Over the past ten years Main Street West Partners has brought nearly $30 million to the Waterfront District area of the city. Added to the City of Suisun City's investment of more than $60 million, our combined efforts have helped advance one of BCDC's goals (which we also share) to maximize public access and view corridors to the waterfront. Among its many positive outcomes, this investment has resulted in the advancement of other BCDC goals including drawing attention to the Bay and helping make the Bay and its shoreline a national recreational treasure.

In a community the size of Suisun City (population 28,000), $100 million is an enormous investment and to jeopardize the completion of this infill project will have devastating social and economic impacts to the community and will reverse the progress made toward providing public exposure and access to the pristine shoreline of the Suisun Marsh which lies just beyond the area of the mixed-use Waterfront District.

710 Kellogg Street – Suisun City, CA 94585 – 707.425.2975/p – 707.427.6797/f – www.mainstwest.com

The adoption of the Bay Plan Amendment No. 1-08 in its current form is poised to set the wheels in motion that will in fact put the completion of this infill project and thereby the long term health of the community in jeopardy.

A staff report by BCDC dated 11/24/10 provides an overview of the State Climate Adaptation Strategy and states:

> *"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."*

This language is too vague to ensure that the completion of the project is attainable. Suisun City's historic downtown Waterfront District is clearly an area that has such significant economic, cultural, and social value and we request that the Bay Plan Amendment No. 1-08 provide specific language allowing for the completion of this infill development and others like it.

Thank you.

Sincerely,

FRANK J. MARINELLO
MANAGING MEMBER
MAIN STREET WEST PARTNERS, LLC

December 7, 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,

The City of Belmont is very supportive of efforts to address impacts from climate change and would like to thank BCDC for the opportunity to provide input on this in,portant matter. We look forward to participating in an open and receptive dialogue to discuss the potential impacts that BCDC's proposed plan amendments will have on land use in the City ofBelmonL

Over the past several years the City of Belmont, through its Redevelopment Agency, has worked to promote the Villages of Belmont Economic Development Target Site Strategy. The City Council has designated four areas that arc ideal for local redevelopment activities. The largest target site, Shoreway Place, is located in the southeast corner of the Ralston Avenue/] Jighway 10] intersection, and appears to be located in J3CDC's identified "Area vulnerable to an approximate 55-inch sea level rise." Also within this 55-inch sea level rise zone arc several properties owned by Oracle, including one that has not yet been devetoped. Each of these properties presents significant opportunity for Belmont to grow as a small Peninsula Community.

It is our understanding that the BCnC Board has asked that public and private agencies submit written comments that document concerns, inquiries and interests relative to the BCnC's proposed Bay Plan amendments. We have prepared the following list for your consideration.

Concerns:

- The proposed amendments have potential to adversely impact the City of Belmont's ability to pursue developmcnt opportunities within the Shoreway Place Targct Site or in the Island Park area, both of which are adjacent to San Francisco Bay sloughs.

- Local Agency control over projects and dcveiopment initiatives may be impeded by duplicative layer of regional developnlent restrictions. The potential for additional review time, additional costly studies, or development restrictions could hinder both public and private projects.

- The City of Belmont supports any collaborative effort by BCDC and local agencies to clarify potential local impacts of the nCDC plan amendments.

Inquiries:

- The April 2009 draft of "Living With a Rising Bay" includes numerous figures that depict "Shoreline Areas Vulnerable to Sea Level Rise." We agree with other local agencies who argue

that the Sea Level Rise analysis does not account for existing shoreline protection measures. We would request that prior to plan finalization, BCDC provide a map that accounts for existing shoreline protection in addition to the current map.

- A BCDC staff report dated]] /24/l 0 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 incOlporate this policy into their decisions and other levels ofgovernment are also encouraged to do so."* These areas subject to future protection measure should be identified by BCDC in an effort help alleviate local agency and private property owner concerns related to the status of future development.

Action Items:

We believe the following actions would help ensure a successful outcome for the proposed BCDC plan amendments:

- Item 8 of California Executive Order 2-] 3-08 states *that "By May 30, 2009, Office ofPlanning 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 Sea Level Rise should be completed prior to the development of regional land-use regulation.

- Ensure continued consistency with the SB 375 Sustainable COJ11Immities Strategy process through the Joint Policy Committee and protect existing, planned, and future transportation infrastructure.

- Efforts should be made to identify what types of development restrictions will be placed on areas that arc currently designated for future growth, including local priority development sites and Planned Development Areas. To that effect, local priority development sites (i.e. Belmont's Shoreway Place) or designated Planned Development Area's that might be exempt from future development restrictions should also be identified.

Belmont is anxious to collaborate with you on these tasks and appreciate the recent receptivity to additional public input. We look forward to participating in the process and trust that we will be in a position to achieve our collective goals.

Thank you for the opportunity to submit this information for your consideration.

Sincerely,

Greg Scoles
City Manager

Ce: Belmont City Council
Carlos deMelo, Community Development Director

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
50 California Street • Suite 2600 • San Francisco, California 94111 • (415) 352-3600 • Fax: (415) 352-3606 • www.bcdc.ca.gov

March 3, 2011

TO: Commissioners and Alternates

FROM: Will Travis, Executive Director (415/352-3653 travis@bcdc.ca.gov)
Joe LaClair, Chief Planner (415/352-3656 joel@bcdc.ca.gov)

SUBJECT: Proposed Bay Plan Amendment No. 1-08 Concerning Climate Change, Comment Letters
(For Commission information only)

Staff Report

Identical versions of the attached letter were submitted to the Commission by 808 individuals prior to November 18, 2010. An additional 10 identical letters were submitted between November 18, 2010 and December 17, 2010, the last day written comments were accepted for the public hearing that opened on September 3, 2010. The names and address of the ten additional individuals are attached.

Leticia	Bayona	2760 Britt Cou	San Jose	CA	95148-2521
Pamela	Beard	8447 Leeward	Huntington Be	CA	92646-6951
Deniz	Cagliyan	310 Union St I	Arcata	CA	95521-6447
Ann	Garth	11 58th Place	Long Beach	CA	90803-4417
Laura	Herndon	3311 W. Alam	Burbank	CA	91505-4313
Beatrice	Howard	1320 Addison	Berkeley	CA	94702-1707
Robert	Kessler	782 Calmar Av	Oakland	CA	94610-1729
Cecilia	Rejas	106 Peacock G	San Rafael	CA	94901-8317
Nadja	Roivas	5318 Chickasa	Flushing	MI	48433-1076
Rob	Simpson	27126 Grandv	Hayward	CA	94542-2324

From: rksox04@yahoo.com
To: info@bcdc.ca.gov
Date: 11/27/2010 10:24 PM
Subject: Pass the Bay Plan Climate Change Policy

Robert Kessler
782 Calmar Ave
Oakland, CA 94610-1729

November 28, 2010

Sean Randolph

Dear Sean Randolph:

BCDC has shown its leadership by educating the Bay Area about the challenges of sea level rise. I urge you now to promptly adopt the staff's proposal for the Bay Plan Climate Change Policy that gives cities guidance on how to protect infrastructure and crucial habitat in areas vulnerable to sea level rise.

This policy has been carefully crafted through two years of extensive outreach, public hearings and BCDC workshops. It advances the California Climate Adaptation Strategy that Governor Schwarzenegger adopted in 2009 and it will help ensure a common and cautious approach to sea level rise planning, instead of allowing cities and developers to ignore risks.

Please reject the false claims and attacks of developers, and adopt these policies that will help guide the Bay Area's sea level rise planning to protect people and wildlife habitat.

Sincerely,

Robert Kessler
5107035120

CITY COUNCIL

Pedro "Pete" M. Sanchez, Mayor
Michael]. Hudson, Mayor Pro-Tern
Jane Day
Sam Derting
Michael A. Segala

CI1Y OF SUISUN CI1Y

701 Civic Center Blvd.
Suisun City, California 94585
Incorporated October 9, 1868

RECEIVED
JAN 31 2011
SANFRANCmCOBAYCONSBRVATION
& DEVELOPMENT COMMISSION

January 28, 2011

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

RE: Proposed Bay Plan Amendments Addressing Climate Change

Dear Chair Randolph,

The City of Suisun City appreciates the willingness of the Commission to continue the dialogue on this important matter. We believe that the meeting in Solano County on January 12, 2011 provided our community with the opportunity to engage with your staff in a productive way. In the hope of assisting your staff in the drafting of the next round of proposed amendments to the Bay Plan, we offer the following responses, which are based on comments made at that meeting:

Provide more accurate descriptions, definitions, and maps:

Change the word "should" to "shall" in the Bay Plan.
Define infill, as staff intends to use the term in proposed Findings and Policies.

- In map form, identify areas likely to be protected versus areas in which protection would likely be cost prohibitive.
- In map form, identify existing land based on three categories: developed, infill, and open space/undeveloped.
- It was stated repeatedly that, within the 100' shoreline band, BCDC's jurisdiction is limited to public access and view corridors. However, a matrix slide shown included a box relating to the 100' shoreline band that referenced "additional Bay Plan policies". While staff offered to send us a letter stating that BCDC has no jurisdiction other than public access and view corridors, we believe that a better approach, regarding the 100' shoreline band, is to amend the Bay Plan to state that BCDC jurisdiction is limited to public access and view corridors and delete existing policies inconsistent with this jurisdictional limitation.

Shift BCDC's approach:

- Clarify what is intended to be advisory and what is intended to be regulatory.
- Minimize the use of interim climate change policies in the Bay Plan and concentrate on working collaboratively as part of the JPC to develop a regional climate change adaptation strategy.
- Work with the scientific community to identify the positive impact that achieving the region's GHG reduction targets will have on regional climate change and consider modifying anticipated SLR estimates based on those impacts.
- Focus efforts on BCDC jurisdictional areas. In particular, we do not believe that BCDC is the appropriate agency to offer advice related to investment decisions in the Bay Area;
- Provide tools and resources to local government related to climate change and SLR, rather than mandates and restrictive regulations.
- Work collaboratively with all stakeholders to develop a state-wide approach to coastal flood protection and develop regional strategies consistent with a state-wide approach.
- To minimize conflicts with Habitat Conservation Plans or impacts to protected species or habitats, consult with other appropriate agencies before recommending policies that encourage the inland migration of marsh areas.

Make specific policy changes in the Bay Plan related to identified infill areas:

Eliminate risk-assessment requirement.
Eliminate requirement to design for inundation.
Anticipate and adopt policies that acknowledge that shoreline protection for developed areas may require fill.
Eliminate the proposed requirement for a financing strategy for shoreline protection.

- Develop a ministerial permit process for rebuilding of existing structures within the 100' shoreline band.
- Remove any policies that propose limiting development, other than to provide pUblic access or view corridors.
- Eliminate design review of local infill projects by BCDC staff and limit review solely to provision of public access and view corridors.

During the course of our dialogue at the January 12, 2011 meeting, as BCDC staff shared perspectives regarding particular topics, the basis for the disconnect that has developed between BCDC and local jurisdictions became clear. For example, staff explained that many of the proposed Bay Plan amendments were "reverse engineered" from strategies, designs, and approaches developed in the Treasure Island project. It is not surprising that such approaches would not be easily transferable to local jurisdictions, such as Suisun City, where typical waterfront projects are one or two-story structures.

Another "tongue-in-cheek" comment was also enlightening, as BCDC staff compared the BlA's efforts to engage public comment to posting information about bomb-making on the internet to demonstrate the reality of terrorism. It appears that BCDC staff believed that keeping the proposed amendments quiet would provide a benefit by not alerting the public to ways in which the existing Bay Plan policies could be used to challenge proposed projects. We hope that such comments were truly made in jest and that BCDC staff, along with the Commission, are sincerely committed to an open and transparent dialogue.

Once again, we bring to your attention the State Climate Adaptation Strategy which mandates that state agencies, and encourages that local agencies, incorporate the accommodation of infill development, stating: "... *vulnerable shoreline areas containing existing development that have regionally significant economic, cultural, or social value may have to be protected, and intill 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.*

We have attached a matrix that includes alternate language to the Fall 2010 proposed amendments for staff's consideration as they develop a revised set of proposed amendments.

Please develop the processes required to coordinate Bay Plan policy amendments with the Sustainable Communities Strategy to ensure that areas designated for growth, such as infill sites and Priority Development Areas (PDA's), are exempt from development restrictions based on climate change and SLR. With participation from stakeholders and collaborative efforts, this process will result in innovative solutions that address climate change while encouraging the private investment and economic development that is critical to the economic vitality of our state and region.

Sincerely,

Suzanne Bragdon, City Manager

Attachments: Proposed alternate language to Fall 2010 proposed amendments

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
g. The Baylands Ecosystem Habitat Goals report provides a regional vision of the types, amounts, and distribution of wetlands and related habitats tl1at are needed to restore and sustain a healthy Bay ecosystem, including restoration of 65,000 acres of tidal marsh.	**Add underlined language and delete struck-through language as follows:** g. The Bayla nds 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 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.	
i. Tidal marshes are an interconnected and essential part of tl1e 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.	**Add underlined language and delete struck-through language as follows:** 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. 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.	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
	Add underlined language as follows: 1. 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. Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. However, scientists studying the Bay estimate that sedimentation will not be able to keep pace with accelerating sea level rise, due largely to 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.	**Add underlined language and delete struck-through language as follows:** ~~k~~ 1. Sedimentation is an essential factor in the creation, maintenance and growth of tidal marsh and tidal flat habitat. Ho~~wever,~~ S~~s~~cientists 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.	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
	Add underlined language as follows: 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.	
	Add underlined language as follows: 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.	
1. 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)	~~1.~~ o. 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;	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
competition for food, habitat, and other necessities; (3) disturbance of habitat; (4) displacement; or (5) hybridization. Many non-native species enter the Bay from cOllU11ercial 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. Conh'ol or eradication is a critical step in reducing tl1e harm associated with non-native species.	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.	
m. Fill material, such as rock and sediments dredged from tl1e Bay, can enhance or benefIcially conh"ibute 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,	~~m.~~p. 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.	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City 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 Bay1ands Ecosystem Habitat Goals report, around 65,000 acres of areas diked from the Bay should be restored to tidal action. Further, local government 1an.d use and tax policies should not lead to the conversion of these restorable lands to uses tll.at would preclude or deter potential restoration. The public should make every effort to acquire these lands from willing sellers for the purpose of restoration.	**Add underlined language and delete struck-through language as follows:** 4. Where and ~~whenever~~ possible feasible, former tidal marshes and tidal flats that have been diked from tll.e 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 andwi1dlife. As recommended in the Bay1ands 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 from willing sellers for the purpose of habitat restoration and wetland migration.	
	Add underlined language and delete struck-through language as follows: 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.	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language**
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 sustain,ability 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 inh"oduction, 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 notmet, appropriate corrective measures should be taken.	**Add underlined language and delete struck-through language as follows:** ~~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; ~~and~~ (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 (i) site characterization. If success criteria are not met, appropriate corrective adaptive measures should be taken.	

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	Staff's Proposed Findings	Suisun City Alternative Language
	Add underlined language as follows: 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.	
	Add underlined language as follows: b. 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.	

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	**Staff's Proposed Findings**	**Suisun City Alternative Language**
	Add underlined language as follows: c. Global surface temperature increases are acceleratin.g 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 centulY. 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.	

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	Staff's Proposed Findings	Suisun City Alternative Language
	Add underlined language as follows: d. Climate change will alter key factors that conh'ibute 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 Nifio 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.	
	Add underlined language as follows: e. Shoreline areas currently vulnerable to a lOO-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	

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	Staff's Proposed Findings	Suisun City Alternative Language
	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.	
	Add underlined language as follows: 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 vuh1erabilities 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.	

Climate Change		
(There are no existing Bay Plan findings and policies, on climate change.)	Staff's Proposed Findings	Suisun City Alternative Language
	Add underlined language as follows: 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.	
	Add underlined language as follows: 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: 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.	
	Add underlined language as **follows:** i 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: k. 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.	
	Add underlined language as follows: 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: 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 wetlands will increase the risk of shoreline flooding.	
	Add underlined language as follows: 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 tlle 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: o. Approaches for ensuring public safety in developed vulnerable shoreline areas include: (1) protecting existing development; (2) accommodating floodirig 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.	
	Add underlined language as follows: p. Will development is the economic use of underutilized or vacant land, or the rehabilitation of existing structures or infrastructure located in an area where supporting infrastructui·e is in place and that is surrounded by existing development that either is or will be served by transit. Will 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.	
	Add underlined language as follows: q. 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: 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 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.	
	Add underlined language as follows: s. 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.	

Climate Change		
	Staff's Proposed Findings	**Suisun City Alternative Language**
	Add underlined language as follows: 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.	
	Add underlined language as follows: 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.	
	Add underlined language as follows: 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.	

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	Add underlined language as follows: 1. When planning shoreline areas or designing larger shoreline projects, a risk assessment should be prepared, based on the estimated IOO-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.	1, When planning shoreline areas or designing large-scale non-infill shoreline projects, a risk assessment should be prepared, based on the estimated lOO-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 and consistent with state-wide projections, should be used in the risk assessment.
	Add underlined language as follows: 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 Will projects within existing urbanized areas that likely will be protected whether or not the Will 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.	2, Within areas vulnerable to future shoreline flooding, all projects-other than repairs of existing facilities, projects that do not increase risks to public safety, interim projects, infill projects, and development within ABAG-designated Priority Development Areas-should be designed to be resilient for the life of the project.

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	Add underlined language. as follows: 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.	. 3. BCDC shall identify undeveloped, vulnerable shoreline areas that currently .sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enhancement. BCDC, in cooperation with the local government within whose jurisdiction an area so identified exists, shall study the area regarding its potential for preservation, enhancement. or protection as an area in which to allow the inland migration of Bay habitat as sea level rises. If a likely funding source for purchase of the area has been identified, development shall be discouraged to allow a reasonable time for acquisition of the area.
	Add underlined language as follows: 4. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.	Delete, and include similar policy in Regional Strategy when adopted.

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	Add underlined language as follows: 5. The Conunission, in collaboration with the Toint Policy Conunittee, 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 developm.ent should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.	(This policy should track the statutory language from AB 2094 as closely as possible.) 5. The SFBCDC, in coordination with local governments, regional councils of government, and other agencies and interested parties, may 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. However, prior to the development of regional strategies, BCDC shall: 1) identify for public review areas that may be subject to erosion, inundation, or other impacts from sea level rise and climate change; 2) Analyze and report the economic benefits and costs of protecting areas likely to be impacted; 3) Analyze and report the environmental benefits and costs of protecting areas likely to be impacted; 4)Upon completion of steps 1 - 3, BCDC may identify goals and develop regional strategies that

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
		describe how to mitigate and adapt to projected sea level rise and other climate-change impacts on the bay and shoreline, including protecting resources from erosion and inundation, and maintaining, restoring or enhancing the productivity of bay and shoreline environments.
	The goals of the strategy should be to: a. 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; 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; 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	Delete all goals. Goals should be developed as part of the Regional Strategy, not as policy in the Bay Plan.

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	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, when planning or regulating new development in areas vulnerable to future shoreline flooding, new projects should be limited to: a. minor repairs of existing facilities or small projects that do not increase risks to public safety;	6. Until a regional sea level rise adaptation strategy can be completed, BCDC shall provide non-mandatory guidance to local governments for design adaptations and other practical approaches to potential sea level

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	b. transportation facilities, public utilities or other critical infrastructure that is necessary for the continued viability of existin.g 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, 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 risihg 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; 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 shoreline protection during the life of the project; or f. public parks, natural resource restoration or environmental enhancement proiects.	rise and climate change impacts, and consistent with the Sustainable Communities Strategy, once adopted.

Climate Change		
	Staff's Proposed Policies	**Suisun City Alternative Language**
	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.	7. After the process for review and comment by the local jurisdiction with authority over a particular project is completed and upon application for a pennit from BCDC, BCDC shall coordinate regional review to resolve conflicting guidelines, standards, or conditions before reviewing the application.

Safety of Fills		
Existing **Bay Plan Findings**	**Staff's Proposed Findings**	**Suisun City Alternative Language**
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.	Add underlined language and delete struck-through language as follows: 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 ~~T~~to prevent such damage~~,~~ is to locate projects and facilities ~~structures~~ on fill or near the shoreline should be above ~~the~~ a ~~highest~~ e)(pected water levellDD-year flood level that takes future sea level rise into account, during the expected life of the project. or should be protected for the expected life of the ~~project~~ by Other approaches that can reduce flood damage include protecting structures 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.	

Safety of Fills

Existing Bay Plan Findings	Staff's Proposed Findings	Suisun City Alternative Language
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 an.d (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 h'apped 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 and as	**Add underlined language and delete struck-through language as follows:** 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 oneand 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 earthls 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 eXh'action, 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	

Safety of Fills		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
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 in.definitely 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.	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 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 levels.	

Safety of Fills		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language**
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.	**Add underlined language and delete struck-through language as follows:** 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 seismograpi1s 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.	

Safety of Fills		
Existing" Bay Plan Findings	**Staff's Proposed Policies**	**Suisun City Alternative Language**
4. To prevent damage from flooding, sb'uctures 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, sb'uctures 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.	**Add underlined language and delete struck-through language as follows:** 4. Adequate measures should be provided ~~T~~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 ha'Je 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~~ IOO-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 placed in the Bay.	

Safety of Fills		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language'**
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 tl1e 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.	**Add underlined language and delete struck-through language as follows:** 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 ath'acting people ai'e 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.	**Add underlined language and delete struck-through language as follows:** 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 so 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 and are properly designed to assure long-term protection from flood hazards shoreline flooding.	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
	Add underlined language as follows: a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.	
a. Erosion conh'ol 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 reconsh·uction.	**Delete struck-through language as follows:** ~~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 reconsh·uction.	
b. Most erosion conh'ol projects involve some fill which can adversely affect natural resources such as water surface area and volume, tidal circulation, wildlife use, lnarshes, and mudflats.	**Add underlined language and delete struck-through language as follows:** ~~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. 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 s.ecurity 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	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
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 shucture 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 sh·ucture is appropriate in all situations. When a sh'ucture is not appropriate or improperly designed and constructed to meet the unique conditions of and the erosion forces at a project site, the sh'ucture 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 site1s natural resources.	**Add underlined language and delete struck-through language as follows:** c. d. Structural ~~S~~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 is improperly designed and constructed to meet the unique site characteristics, flood 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 site's natural resources.	
	Add underlined language as follows: 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. 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).	

~~Protection of the~~ Shoreline Protection		
~~Existing Bay~~ Plan Findings	Staff's Proposed Findings	Suisun City Alternative Language
d. Nonsh·uctural erosion control methods, such as marsh plantings, are typically effective only in areas experiencill.g mild erosion. However, in some instances, it may be possible to combine marsh restoration with structural approaches to conh·ol shoreline erosion, thereby minimizing the erosion control project's impact on natural resources.	**Add underlined language and delete struck-through language as follows:** ~~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, i~~ In some instances, it may be possible to combine marsh habitat restoration, enhancement or protection with structural approaches to provide protection from flooding and conh·ol shoreline erosion, thereby minimizing the erosion control shoreline protection project's impact on natural resources.	
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 typically fail rapidly in storm conditions because the material slides hayward or is washed offshore. Repairing these ineffective sh·uctures requires additional material to be placed along the shoreline, leadiIlg to unnecessary fill and disturbance of natural resources.	**Add underlined language and delete struck-through language as follows:** ~~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 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.	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language**
1. New shorelin.e erosion conh'ol projects and the maintenance or reconsh'uction of existing erosion conh'ol facilities should be authorized if: (a) the project is necessary to protect the shoreline from erosion; (b) the type of the protective sh'ucture is appropriate for the project site and the erosion conditions at the site; and (c) the project is properly designed and consh'ucted. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes, should participate in the design of erosion conh'ol projects,	**Add underlined language and delete struck-through language as follows:** I, New shoreline erosion control protection projects and the maintenance or reconstruction of existing erosion conh'ol facilities projects should be authorized if: (a) the projectis necessary to protect existing shoreline development 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 and flooding conditions at the site; ~~and~~ (c) the project is properly engineered to provide erosion conh'ol 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; (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.	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language**
2. Riprap revehnents, the most cornmon shoreline protective structure, should be consh'ucted of properly sized and placed material that meet sound engineering criteria for durability, density, and porosity. Armor materials used in the revehnent 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 revehnents constructed out of other debris materials should not be authorized.	**Add underlined language and delete struck-through language as follows:** 2. Riprap revehnents, the most cornmon 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 revehnent 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, ~~or~~ and are carefully selected for size, density, and durability, and freedom of e)draneous materials from demolition debris will meet these requirements. Riprap revehnents 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 that the effects of the erosion control project on natural resources during the life of the project will be the minimum necessary.	**Add underlined language and delete struck-through language as follows:** 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.	

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.shhnl.

Public Access		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Suisun City Alternative Language**
	Add underlined language as follows: 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. 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.	**Add underlined language and delete struck-through language as follows:** ~~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).	

Public Access		
Existing Bay Plan Findings	Staff's Proposed Findings	Suisun City Alternative Language
k. Studies indicate that public access may have immediate effects on wildlife (including flushing, mcreased 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.	**Add underlined language and delete struck-through language as follows:** ~~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. 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 resh·ictions such as leash requirements, and prohibition of public access in areas where other sh·ategies are insufficient to avoid adverse effects. Properly sited and/or	**Add underlined language and delete strUCk-through language as follows:** ~~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	

Public Access		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Suisun City Alternative Language**
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 appropriate by requirin.g dedication of fee title or easements at no cost to the public, in tl1e same manner that streets, park sites, and school sites are dedicated to the public as part of the subdivision process in cities and counties.	Add underlined language and delete struck-through language as follows: ~~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. 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.	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 tl1e 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 shall either be required to remain viable in the event of future sea level rise or flooding through the anticipated life of the project, or equivalent access consistent with the project shall be provided nearby.

City of Alameda California

RECEIVED
JAN 20 2011
SAN FRANCISCO BAY CONSERVATION
& DEVELOPMENT COMMISSION

November 23, 2010

Mr. R. Sean Randolph, Chairman
San Francisco Bay Conservation
and Development Commission
c/o Bay Area Council
201 California Street, Suite 1450
San Francisco, CA 94111

Re: Proposed Bay Plan Amendment 1-08 Concerning Climate Change - City of Alameda Resolution No. 14505 Opposing Adoption of Proposed Bay Plan Amendment

Dear Chairman Randolph:

The City of Alameda appreciates the opportunity to provide comments on the proposed Bay Plan Amendment 1-08. In confronting the potential impacts of climate change, the City of Alameda has been proactively evaluating possible solutions and would like to retain local control over those critical land use decisions.

The City of Alameda acknowledges the seriousness of the issues being raised by local governments, business associations, labor groups, housing advocates, and environmental organizations over potential negative impacts and unintended consequences related to local control over land-use decisions, job growth, and economic development, and on the region's ability to curb Greenhouse Gas (GHG) emissions and afford investments in new flood-control infrastructure. The proposed amendment could be a means by which regional agencies can partner together to find a solution. But there needs to be active solicitation and involvement by all the affected parties.

It is imperative, if the Bay Conservation and Development Commission (BCDC) has decided to take a position on the problem, that sufficient time be allocated to assess the consequences and provide specific scientific and financial responses before advancing the guidelines to a policy document. At this time, the City Council of the City of Alameda opposes the adoption of the Bay Plan Amendment until such time as BCDC:

Office of the City Manager
2263 Santa Clara Avenue, Room 320
Alameda, California 94501-4477
510.747.4700 Office • Fax 510.747.4704 • TDD 510.522.7538

- Meets and confers with the City Council and other affected cities and agencies around the Bay Area to present and discuss the proposed Bay Plan Amendment and work to revise it, as appropriate, in a collaborative manner; and
- Conducts adequate environmental assessment for the proposed Bay Plan Amendments; and
- Evaluates the consistency of the proposed Bay Plan Amendments with existing General Plans and zoning laws in cities and counties within the projected inundation zone; and
- Identifies and addresses the equity impacts of the proposed Bay Plan Amendment and identifies all reasonably feasible mitigation measures to avoid such impacts; and
- Identifies and addresses other environmental and economic impacts of the proposed Bay Plan Amendment and identifies all reasonably feasible mitigation measures to avoid such impacts; and
- Proposes a Bay Plan Amendment that does not assert BCDC direction or influence over traditional City land use planning authority.

The City of Alameda appreciates the opportunity for ongoing consideration of this important issue and urges BCDC not to impose any premature and artificial termination of this important process.

Respectfully,

ACTING CITY MANAGER 11/24/10

for Ann Marie Gallant
Interim City Manager

AMG:gc

Enclosure: City of Alameda Resolution No. 14505

cc: Executive Director Will Travis

CITY OF ALAMEDA RESOLUTION NO. 14605

Approved as to Form
City Attorney

PROTECTING THE RESIDENTS AND BUINESSES OF THE CITY OF ALAMEDA FROM FUTURE SEA LEVEL RISE, RETAINING LOCAL CONTROL OVER CRITICAL LAND USE DECISIONS, AND REQUESTING LOCAL GOVERNMENT AND PUBLIC PARTICIPATION IN THE PROPOSED BAY CONSERVATION AND DEVELOPMENT COMMISSION CLIMATE CHANGE BAY PLAN AMENDMENT 1-08

WHEREAS, the City of Alameda was legally incorporated on April 19, 1854, and maintains police powers to ensure the health and well-being of its residents; and

Whereas, the State of California has recognized the role of local government in planning for and responding to climate change through its legislative actions, such as the Global Warming Solutions Act of 2006 (AB 32) and the Sustainable Communities and Climate Protection Act of 2008 (SB 375), and the California Air Resources Board has stated in its Climate Change Scoping Plan, that local governments are "essential partners" to achieving the State's climate change goals; and

Whereas, the City currently evaluates the effects of sea level rise and climate change as part of its standard environmental review process under the California Environmental Quality Act; and

Whereas, the City is developing a new Climate Change Element as part of its General Plan Update; and

Whereas, the Bay Conservation Development Commission (BCDC) is a limited purpose agency of the State of California; and

Whereas, BCDC staff has projected that sea level will rise 55 inches by the year 2100, identifying 213,000 acres of land around the Bay as being in the potential sea level rise inundation zone and vulnerable to flooding; and

Whereas, substantial portions of the City are within the identified inundation zone; and

Whereas, BCDC staff has prepared a proposed Bay Plan Amendment that would establish a policy that specifies, among other things, "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..."; and

Whereas, BCDC's legal authority and regulatory jurisdiction do not extend to much of the area covered by the inundation zone; and

Whereas, the proposed Bay Plan Amendment may impose additional burdens on the City in its compliance with the California Environmental Quality Act and may expose the City to additional risks of litigation under that Act; and

Whereas, BCDC staff has presented no analysis regarding the consistency of the proposed Bay Plan Amendment with existing General Plans or zoning laws of any of the cities or counties within the projected inundation zone, including Alameda; and

Whereas, BCDC staff has determined that low-income residents will be disproportionately affected by:

- Sea level rise in five Bay Area Counties.
- Preparing for and coping with sea level rise.
- Indirect impacts of sea level rise (*e.g.*, from retrofits to protect critical infrastructure); and

Whereas, BCDC staff has stated that "...BCDC has no authority to address social equity issues..." and has proposed no mitigation measure to address these disproportionate impacts to low-income communities; and

Whereas, BCDC staff concluded in its report accompanying the proposed Bay Plan Amendment that "the proposed amendment will have no significant adverse environmental impacts," without consulting with impacted communities and without considering various direct, indirect, and cumulative adverse impacts of the proposed Bay Plan Amendment, including those relating to displacement of people and businesses, traffic congestion, and tail pipe and green house gas emissions that would result from limiting shoreline protection and infill development opportunities; and

Whereas, the proposed Bay Plan Amendment, if adopted, could adversely affect existing residential, commercial, institutional, and industrial uses and property values of the land within the inundation zone; and

Whereas, BCDC held its first public hearing on the proposed Bay Plan Amendment in almost one year on October 7, 2010; and

Whereas, numerous cities, agencies, landowners, employers, and Bay Area residents testified at the public hearing expressing great concern that insufficient outreach has occurred in the development of the proposed Bay Plan Amendment.

NOW, THEREFORE, BE IT RESOLVED, THAT the City Council of the City of Alameda does hereby oppose the adoption of the Bay Plan Amendment until such time as BCDC:

- Meets and confers with the City Council and other affected Cities and agencies around the Bay Area to present and discuss the proposed Bay Plan Amendment and work to revise it, as appropriate, in a collaborative manner;
- Conducts adequate environmental assessment for the proposed Bay Plan Amendments;
- Evaluates the consistency of the proposed Bay Plan Amendments with existing General Plans and zoning laws in cities and counties within the projected inundation zone;
- Identifies and addresses the equity impacts of the proposed Bay Plan Amendment and identifies all reasonably feasible mitigation measures to avoid such impacts;
- Identifies and addresses other environmental and economic impacts of the proposed Bay Plan Amendment and identifies all reasonably feasible mitigation measures to avoid such impacts; and Proposes a Bay Plan Amendment that does not assert BCDC direction or influence over traditional City land use planning authority.
- Proposes a Bay Plan Amendment that does not assert BCDC direction or influence over traditional City land use planning authority.

* * * * *

I, the undersigned, hereby certify that the foregoing Resolution was duly and regularly adopted and passed by the Council of the City of Alameda during the Regular Meeting of the City Council on the 16th day of November, 2010, by the following vote to wit:

AYES:	Councilmembers deHaan, Gilmore, Matarrese, Tam and Mayor Johnson - 5.
NOES:	None.
ABSENT:	None.
ABSTENTIONS:	None.

IN WITNESS, WHEREOF, I have hereunto set my hand and affixed the official seal of said City this 17th day of November, 2010.

Lara W

Lara Weisiger, City Clerk
City of Alameda

PRBO Conservalion Science
3820 Cypress Drive # 11
Pelalunto, CA 94954

lei 707.781.2555
email prbo@prba.org
www.prbo.arg

prbo

December 10, 20 I0

Joe LaClair
San Francisco Bay Conservation and Development Commission
50 California Street, Ste 2600
San Francisco, CA 941 I I

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 20 Ia *(America's Climate ChOices)*, "A strong, credible body of scientific evidence shows that climate change is occulTing, is caused largely by human activities, and poses significant risks for a broad range of human and natul-al 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 ec;osystem 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 ,-egion's economic and ecological well-being over the decades ahead, incorpol-ate both (I) 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

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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 GoO. Stanford et.al., *Sea-level probability for* the *last deglaciation: A statistical analysis* of *far-field records. Global and Planetary Change,* 20 I0.)

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,* 20 I0).

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, 20 I I). 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 o'f 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
PI-esident and CEO

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
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.	**Add underlined .language and delete struck-through language as follows:** g. The Baylands Ecosystem Habitat Goals report provides a regional vision of the types, amounts, and distribution of wetlal1.ds 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 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, regionaHargets for types, amounts, and distribution of habitats.	**PRBO Conservation Science:** Add sentence: Regional targets should also incorporate habitat quality and wildlife tal·gets.
i. Tidal marshes are an interconnected and essential part of the Bayls 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.	**Add underlined language and delete struck-through language as follows:** i. Tidalmarshes 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.	

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
	Add underlined language as follows: 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.	**PRBO Conservation Science:** 1st sentence: Landward marsh migration wilL ... ADD: In areas with low suspended sediment, sea level rise and wave energy may also erode the marsh surface and deposit sediment elsewhere. 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)
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.	**Add underlined language and delete struck-through language as follows:** ~~k~~ l. Sedimentation is an essential factor in the creation, maintenance arld growth of tidal ~~marsh and tidal flat habitat. However,~~	**PRBO Conservation Science:** Please modify to address this concern: Erosion of existing tidal flats does not

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 sustainabilityof future wetland restoration projects.	Sscientists studying the Bay estimate observed that sedimentation will not be able to keep pace with accelerating sea levell'ise, due largeiy to declines il':. 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	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. There is regional variability in sediment supply with the Bay Estumy 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.

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
	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.	
	Add underlined language as **follows:** 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	**California Coastkeeper Alliance suggestion:** m. Human actions, such as dredging, disposal, ecosystem restoration, and watershed management, can affect the distribution an.d amount of sediment available to sustain and restore wetlands. Dams, culverts, levees and

	exported from the Bay. Monitoring of these processes can inform management efforts to maintain an adequate supply of sediment for wetlands.	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 call. inform management efforts to maintain an adequate supply of sediment for wetlands. **Alternative language-finding m.**

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
	Add underlined language as follows: 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	**PRBO Conservation Science:** 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.

	these targets.	
1. 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. Conh'ol or eradication is a critical step in reducing the harm associated with non-native species.	~~l.~~ o. 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.	**PRBO Conservation** Science: ADD SENTENCE AT END: Preventing the establishment (preventing introduction in the first place) of invasive species is much more effective tl 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.

Tidal Marshes and Tidal Flats		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
m. Fill material, such as rock and sediments dredged from the Bay, can enhance or beneflcially conh'ibute 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) establishin	~~m.~~ p. 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	**PRBO** Conservation Science: Add subtidal habitat to the sentence so itwill read: "....can enhance or beneficially contribute to the restoration of tidal marsh, tidal flat, and

or recreating rare Bay habitat types.	types.	subtidal habitats by: .../1
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, suchas 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.	**Add underlined language and delete struck-through language as follows:** 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 to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets sh01ild 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 from ~~willing~~ seners for the purpose of habitat restoration and wetland migration.	**PRBO Conservation Science:** MODIFY AS FOLLOWS: " ...other aquatic organisms and wildlife, including migratory shorebirds./1 ADD AFTER: 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,

Tidal Marshes and Tidal Flats

Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language

	Add underlined language and delete struck-through language as follows: 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.	
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.	**Add underlined language and delete struck-through language as follows:** ~~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; ~~and~~ (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 (i) site characterization. If success criteria are~~ not met, appropriate conective adaptive measures should be taken.	**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. 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.p1'bo.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-tenn goals accordinglv.

Climate Change		
(There are no existing Bay Plan findings and policies on climate change.)	Staff's Proposed Findings	Alternative Language
	Add underlined language as follows: 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.	PRBO CONSERVATION SCIENCE ADD AFTER "bunting of fossil fuels, and deforestation./I
	Add underlined language as follows: b. 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 Intergovermnental 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.	

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

and policies on climate change.)		
	Add underlined language as follows: 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 011 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 IPCes 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.	**Treasure Island Development Authority's suggestion:** 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 iTl 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 lll. 2000) for the state that range from 11 to 18 inches at mid-century and 23 to 55 lllches 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 Irees 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.

Climate Change		
	Staff's Proposed Findings	Alternative Language
		Alternative Lan'guage-Finding c. PRBO Conservation Science: The range of models from the CA Climate Action Team effOlis project sea level rise for this century from 31 to 69 inches. (per Venneer, et. at, Global sea level linked to global temperature. *Proceedings ofthe National Academv of Sciences*, 2009.) 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.a!., Sea-level probability for the last deglaciation: A statistical analysis of far-field records. *Global and Planetary Change, 2010.)*
	Add underlined language as follows: 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 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.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: e. Shoreline areas currently vuh1erable to a lOO-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 vuh1erable 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.	**Baykeeper's suggestion:** e. Shoreline areas currently vulnerable to a lOO-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.
		Alternative Language-Finding e.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: 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.	**PRBO Conservation Science:** "stress" is not defined here. Systems under anthropogenic stress? The meaning should be made more explicit.
	Add underlined language as follows: g. In the context of climate change, mitigation refers to actions taken to reduce greenhouse gas emissions, and adaptation	**PRBO Conservation Science:** MODIFY per below: "Adaptation and mitigation measures that are imolemented before sea level rises further, may be

	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.	cost effective and may protect lives, property, wildlife, habitat and ecosystems.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: h. In the context of sea level rise adaptation, imlOvative approaches will likely include financing mechanisms, design concepts and land management practices. Effective, innovative adaptation approaches minimize public safety risksj maximize compatibility with and integration of natural processesj are resilient over a range of sea level, potential flooding impacts and storm intensitiesjand 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.	
	Add underlined language as follows: 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	**PRBO Conservation Science:** 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. Suggested language: "integrating and altering management actions and policy as necessary."

	actions, and integrating this information into future actions..
	Add underlined language as follows: 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 marmer 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.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: k. 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 artd 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.	**California Coastkeeper Alliance suggestion:** k. 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 Ba

	i	is allowed to migrate inlaied. **Alternative Language-Finding k.**

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: 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 recreationa:l opportunities are lost.	
	Add underlined language as follows: 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 ecot0l1es 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 wilHurther 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 aualitv, 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.
	Add underlined language as follows: n. Some Bay Area residents, particularly those with low irlcomes 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.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: o. 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.	**Treasure Island Development Authority's suggestion:** o. 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 vuhl.erab1e shoreline areas; (4) allowing ~~only~~ interim and permall.ent 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.

		Alternative Language-Finding o.

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add underlined language as follows: 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 emissibns in the Bay Area by prOViding jobs and housing in locations and at densities	**California Coastkeeper Alliance suggestion:** *Note:* Do *not include proposed finding p.*
	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.	
	Add underlined language as follows: q. When planning or regulating development within areas vulnerable to flooding from sea level rise, allowing small projects, such as min.or repairs of existing facilities, and interim uses may be acceptable if they do not significantly increase overall risks to public safety.	
	Add underlined language as follows: r. In some cases, the regional goals of encouraging infill development,	**California Coastkeeper Alliance suggestion:** *Note:* Do *not include proposed finding r.*

	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	**Treasure Island Development Authority's suggestion:** r. In some cases, the regional goals of encouraging infill development, remediating enviromnentally degraded land, redeveloping closed military bases and concentrating housing and job density near h'ansit 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

Climate Change

	Staff's Proposed Findings	Alternative Language
	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.	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. **Alternative Language-Finding r.** **PRBO Conservation Science:** Rather than saying, "adaptation strategies "can" be used, Ineasures "can" be incorporated to achieve resilience and sustainability, and a pennanent fmancial strategies "can" be developed", stronger language should be used, - replace can with "should."

	Add underlined language as follows: s. 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 enhan.cement opportunities. Some developed areas may be suitablefor 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.	
	Add underlined language as follows: t. There are multiple local, state; federal, and regional goverrunent agencies with authority over tlee 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.	
Climate Change		
	Staff's Proposed Findings	**Alternative Language**
	Add I!nderlinedlanguage as follows: u. Government jurisdictional boundaries and authorities in the Bay Area are incongruent witle 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.	**PRBO Conservation Science:** Local goveminents should incOlporate regional ecological considerations in developing and implementing local projects.

	Add underlined language as follows: 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 COlmnission 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.	
		Save the Bay's first suggested additional finding: The 2009 California Climate Adaptation Strategy (CAS), adopted pursuant to Executive Order S-13-08 establishes avoiding future hazards arld 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, pennitting,

Climate Change		
	Staff's Proposed Findings	**Alternative Language**
		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 aJ.1d storm activities is to carefully consider new development within areas vulnerable to inundation aJ.1d erosion, and to consider prohibiting development of undeveloped. vuh1erable shoreline areas containing critical habitat or opportunities for habitat creation. State agencies should generally not

		plan, develop, or build any new significant sh'ucture 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."
		Save the Bay'S second suggested additional finding: 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 sh'uctures 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."
Climate Change		
	Staff's Proposed Findings	**Alternative Language**
		Save the Bay's third suggested additional finding: 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 aroundtidal wetlands. For these priority conservation areas, impacts from nearby development should be minimized, such as secondary impacts from impaired water aualitv or hard protection devices."
		Save the Bay's fourth suggested additional finding: 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, guidall.ce, and criteria, as appropriate. Agencies with overlapping jurisdictions in the coastal zone will coordinate when drafting these plans to reduce or eliminate conflicting approaches." Tll.e 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 nublic access is orovided where aooronriate./f
	Climate Change	
	Staff's Proposed Policies	**Alternative Language**
	Add underlined language as follows: 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.	**Treasure Island Development Authority's suggestion:** 1. When plamung 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.

Climate Change		
	Staff's Proposed Policies	Alternative Language
		Baykeeper's suggestion: 1. 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 developm.ent. 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. **Alternative Language-Policy 1**

	Climate Change	
	Staff's Proposed Policies	**Alternative Language**
	Add underlined language as follows: 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.	**California Coastkeeper Alliance's suggestion:** 2. 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. **Treasure Island Development Authority's suggestion:** 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 proiects that do not

		increase risks to public safety, interim projects, infill projects within existing urbartized 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 minim.um 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. Plamling 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**
	Add underlined language as follows: 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.	**Save the Bay's suggestion:** 3. Undeveloped, vuh1.erable shoreline areas that currently sustain diverse habitats and species or possess conditions that make the areas especially suitable for ecosystem enl1.aJ.1.cement should be preserved, enhaJ.1.ced or permaJ.1.ently 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. **Alternative Language-Policy 3**

	Add underlined language as follows: 4. Wherever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.	
Climate Change		
	Staff's Proposed Policies	**Alternative Language**
	Add underlined language as follows: 5. The Commission, in collaboration with the Toint 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	**Treasure Island Development Authority's suggestion:** 5. The Commission, in collaboration with the Toint 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 shorelirie 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

	should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.	encouraged, where new development should be permitted, where existing development should eventually be removed to allow the Bay to migrate inland.
Climate Change		
	Staff's Proposed Policies	**Alternative Language**
	The goals of the strategy should be to: a. 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;	**California Coastkeeper Alliance's suggestion:** 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 h'ails; **Treasure Island Development Authority's suggestion:** 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 traJ.lsportation, wastewater treatment facilities, major parks, recreational aJ.·eas aJ.ld trails;
	b. enhance the Bay ecosystem (e.g., Bay habitats, fish, wildlife and other aquatic organisms) by	**PRBO Conservation Science:** Assuring" adequate volumes of sediment for marsh accretion may not be feasible. Instead,

	identifying both developed and undeveloped areas where tidal wetlands and tidal flats can migrate landwardj assuring adequate volumes of sediment for marsh accretionj identifying priority conservation areas that should be considered for acquisition, preservation or enhancementj developing and planning for flood protectionj and maintaining sufficient transitional habitat and upland buffer areas around tidal wetlandsj	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).

Climate Change		
	Staff's Proposed Policies	**Alternative Language**
	c. integrate the protection of existing and future shoreline development with the enhall.cement of the Bay ecosystem, such as by using feasible shoreline protection measures that incorporate natural Bay habitat for flood control and erosion preventionj d. encourage innovative approaches to sea level rise adaptationj e. identify a framework for integrating the adaptation responses of multiple government agenciesj f. integrate regional mitigation measures designed to reduce greenhouse gas emissions with regional adaptation measures designed to address the unavoidable impacts of climate changej g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transitj h. address any existing contamination and the implications of the contamination on water qualityj i. support research that provides information	**CaliforniaCoastkeeper Alliance's suggestion:** c. integrate the protection of existing and future shoreline enviromnent 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 preventionj **California Coastkeeper Alliance's suggestion:** g. advance regional sustainability, encourage job creation, and provide diverse housing served by transitj **Alternative Language-Policy 5**

	useful for planning and policy development on the impacts of climate change on the Bay, particularly those related to shoreline flooding; i identify actions to prepare and implement the strategy, including any needed chall.ges 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.	
Climate Change		
	Staff's Proposed Policies	**Alternative Language**
	Add underlined language as follows: 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: 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 developmentj 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;	**Baykeeper's suggestion:** 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 located below the 100 year flood level plus 2100 sea-level rise should be limited to: a) minor repairs of existing facilities or changes to land use designation s111all projects that do not increase risks to public safety; b) 'Less Vulnerable' all.d 'Water Compatible' developments, as defined below, and subject to appropriate pollution-prevention controls and adaptive management strategies. 'Less Vulnerable' developments include: • Retail buildings; • Non-residential offices; • Restaurants; • Storage and distribution facilities; • Sand all.d gravel processing areas; • Militarv installations'

	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 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 protectill.g the project from any sea level rise or storm damage in the future; 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 shoreline protection during the life of the project; or f. public parks, natural resource restoration or environmental enhancement projects.	• Assembly and leisure; and • Land and buildings used for agriculture. 'Water Compatible' developments include: • Roads all.d transportation facilities necessary for existing development; • Electrical, water and sewage h'ansmission infrastructure; • Maintenance of flood conh'ol sh'uctures;20 • Docks, marinas and wharves; • Navigation facilities; • Ship building, repairing and dismantling, dockside fish processing and compatible activities requiring a waterside location; • Water-based recreation; • Public parks, habitat restoration projects, enviromnental remediation projects and essential infrastructure for these projects, such as restrooms and changing areas. c) redevelopment of 'More Vulnerable' developments, ill.cluding 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 eiements: (i) an adaptation strategy for dealing with rising sea level and shoreline flooding with definitive goals and an adaptive management plan for addressill.g 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 protectill.g the project from any sea level rise or storm damage in the future; (iii) evidence that uroiect imulementation shall not exacerbate

		flood risk through loss of flood storage capacity or; 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.

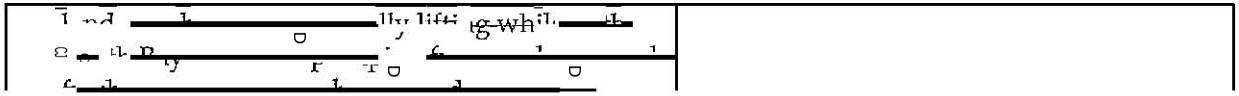
Climate Change		
	Staff's Proposed Policies	Alternative Language
		California Coastkeeper Alliance suggestion: *Note:* Do *not include finding 6(c).* **Treasure Island Development Authority's suggestion:** *Note: Keep the rest of Policy* 6 *as proposed, but revise Policy 6(d)* (2) *(iii) as follows:* 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; **Alternative Language-Policy 6:** **PRBO Conservation Science:** 6c) Feasibility of protecting these areas from sea level rise should also be taken into consideration.

	Climate Change	
	Staff's Proposed Policies	**Alternative Language**
	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.	

	Safety of Fills	
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
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, sh"uctures 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.	**Add underlined language and delete struck-through language as follows:** f. Flood damage to fills and shoreline areas can result from a combination of sea level rise, storm surge, ~~heavy~~ rain.fall, high tides, and winds blowing onshore. The most effective way ~~T~~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 lOa-year flood level that takes future sea level rise into account, during the expected life of the project. or should be protected for the eJEpected life of the project by Other approaches that carl reduce flood damage include orotecting	**Baykeeper's suggestion:** 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 ~~T~~to prevent such damage is to locate projects outside areas at risk of sea-level rise and storm surges of an appropriate return frequency., 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.~~ Other approaches that can reduce flood damage include protecting structures or areas with biological engineering approaches (i.e. Living Walls), levees, seawalls,

	structures or areas with levees, ~~of an~~ adequate height seawalls, tidahnarshes, 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.	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. **Alternative Language-Finding f:**

Safety of Fills		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
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 an.d 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 brin.g about an accelerated rise in sea level worldwide through thermal expansion of the upper layers of the oceans and m.elting 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	**Add underlined language and delete struck-through language as follows:** 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~~ fOUf and five inches in ~~the~~ Bay in the ~~next~~ 50 years and could increase appfOximately 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 mEpansion 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 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 chaI,ge (lifting or subsidence) around the Bay. For example, in Sausalito, the	



Safety of Fills		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
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 *morei* if this occurs, extensive levees may be needed to prevent inundation of low-lying areas by the extreme high water levels.	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). ~~In~~dications are that if heavy ~~groundwater~~ pumping is continued indefinitely in the ~~South~~ Bay area, land in the ~~Alviso~~ area (~~which~~ has already subsided Dabout 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 levels.	
Safety of Fills		
EXisting Bay Plan Findings	Staff's Proposed Policies	Alternative Language
3. To provide vitally-needed information on the effects of eaJ.'thquakes 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,	Add underlined language and delete struck-through language as follows: 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 compaJ.'ison and evaluation.	

Safety of Fills		
Existing Bay Plan Findings	**Staff's Proposed Policies**	**Alternative Language**
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, sh"uctures 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.	**Add underlined language and delete struck-through language as follows:** 4. Adequate measures should be provided ~~T~~to prevent damage from sea level lise 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 lOO-year flood elevation that takes future sea level rise into account for the expected life of the project~~.~~, be E)(ceptions 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	**Baykeeper's suggestion:** 4. Adequate measures should be provided ~~T~~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 COlmnission 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 th.e ~~wave~~ runup level or sufficier:.i:ly 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 Conh"ol Dish"iets and! or the Army Corps of Engineers; ef structures ~~will~~ be above the highest estimated tide elevation. E)(ceptions to the general heigh.t 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

	placed in the Bay.	for levee widening is placed in the Bay. **Alternative Language-Policy 4**

Safety of Fills

Existing Bay Plan Policies	Staff's Proposed Policies	Alternative Language
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 all 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.	**Add underlined language and delete struck-through language as follows:** 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 e)cpected life of the ~~project~~ ~~or~~ sufficiently protected by levees ~~to~~ ~~allow~~ ~~for~~ the effects of additional subsidence ~~for~~ the e)(pected 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 ~~are~~as ~~from~~ tidal ~~flooding~~ should be sufficiently wide on th.e 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 aSSUl'e 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.	**Add underlined language and delete struck-through language as follows:** 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 so 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 and are properly designed to assure long-term protection from ~~flood~~ hazards shoreline flooding.

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
	Add underlined language as follows: a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and dalnage from flooding.	
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.	**Delete struck-through language as follows:** ~~a.~~ b. Erosioli 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, protecthre 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.	

b. Most erosion control projects involve some fill which can adversely affect natural resources such as water surface area and volume, tidal ch'c,ulation, wildlife use, marshes, and mudflats.	**Add underlined language and delete struck-through language as follows:** ~~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, ar.d mudflats. Structural shoreline protection can further cause erosion of tidal wetlall.ds 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, tlle demand for new shoreline protection projects will likely increase. Some projects may involve extensive amounts of fill.

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
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 riot 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.	**Add underlined language and delete struck-through language as follows:** e. d. Str.uctural ~~S~~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 is improperly designed and constructed to meet the unique site characteristics, flood 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	

	site's natural resources.
	Add underlined language as follows: e. Addressing the impacts of sea level rise arld 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).

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
d. Nonsh'uctural 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 conh"ol project's impact on natural resources.	**Add underlined language and delete struck-through language as follows:** ~~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,~~ i In some instances, it may be possible to combine ~~marsh~~ habitat restoration, enhancement or protection 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.	
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	**Add underlined language and delete struck-through language as follows:** ~~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	

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.	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.	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Alternative Language**
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 experiericed in coastal processes, should participate in the design of erosion control projects.	**Add underlined language and delete struck-through language as follows:** 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 shoreline development 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 and flooding conditions at the site; ~~and~~ (c) the project is properly 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; (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	**Treasure Island Development Authority's suggestion:** 1. New shoreline erosion control protection projects and the maintenance or reconstruction of existing erosion conh"ol facilities projects should be authorized if: (a) the project is necessary to protect existing shoreline development and Priority Development Areas as designated by the ABAG FOCUS study 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 and flooding conditions at the site; ~~and~~ (c) the project is properly engineered to provide erosion control and flood protection for the expected life of the project based on a 100-

	concerns, such as civil engineers experienced in coastal processes should participate in the design.	year flood event that takes future sea level rise into account; (d) the project is properly designed an.d constructed to prevent significant impediments to physical and visual public acceSSj and (e) the protection is integrated with current or plalU1ed adjacent shoreline protection measures. Professionals knowledgeable of the Commission's concerns, such as civil engineers experienced in coastal processes should participate in the design. **Alternative Language-Policy 1**

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Alternative Language**
2. Riprap revetments, the most cornmon 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.	**Add underlined language and delete struck-through language as follows:** 2. Riprap revetments, the most cornman 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 quarrystoneor concrete pieces that have either been specially cast, are free of extraneous materials from demolition debris, ~~or~~ arld are carefully selected for size, density, and durability~~, and~~ freedom of extraneous materials from .demolition debris wili 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 that the effects of the erosion control project on natural resources during the life of the project will be the minimum necessary.	**Add underlined language and delete struck-through language as follows:** 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.	

~~Protection of the~~ Shoreline Protection		
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Alternative Language**
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.	I 4. Whenever feasible and appropriate, shoreline protecti~~ve~~on projects should include provisions for nonstructural methods such as marsh vegetation ~~where~~ feasible 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 protecti~~ve~~on projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable feasible.	
	Add underlined language as follows: 5. 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.	

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 tms 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.bcclc.ca.gov/laws plans/plans/sfbav plan.shhnl.

Public Access		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
	Add underlined language as follows: 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, wmch 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, wmch may impede physical and visual access to the Bay.	
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.	**Add underlined language and delete struck-through language as follows:** ~~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 designin.g 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).	

Public Access		
Existing Bay Plan Findings	**Staff's Proposed Findings**	**Alternative Language**
k. Studies indicate that public access may have inunediate effects on wildlife (including flushing, increased stress, interrupted foraging, or nest abandonment) and may result in adverselong-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.	**Add underlined language and delete struck-through language as follows:** ~~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. 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	**Add underlined language and delete struck-through language as follows:** ~~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	**PRBD** Conservation Science Pet restrictions such as leash requirements are not effective unless strictly enforced which is costly and llilpopular. ADD: Areas near sensitive wildlife such as nesting endangered soecies should

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	be closed to pets and/or humans.

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, and the potential impacts of future sea level Fise climate change.	
	Public Access	
Existing Bay Plan Policies	**Staff's Proposed Policies**	**Alternative Language**
	Add underlined language as follows: 5. Public access should be sited, designed, managed and maintamed to avoid significant adverse impacts from sea level rise and shoreline flooding. .	
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~~ 6. Whenever public access to the Bay is provided as a condition of development, on fill or on the	

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.	.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 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.

January 12, 2011

Via Electronic Mail

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Chairman
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Executive Officer
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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 future 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

sf-2942294

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
g. The Baylands Ecosystem Habitat Goals report provides a regional vision of the types, amounts, and distribution of wetlands and related habitats that are needed to restore and sustain a healthy Bay ecosystem, including restoration of 65,000 acres of tidal marsh. These recommendations were based on 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.
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. 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.

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 p~~Public 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.

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 though 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.)

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.

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.

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.

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.

a. 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 existing and appropriately planned future development;

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;

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.)

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

f. public parks, natural resource restoration or environmental enhancement projects.

Safety of Fills – Findings

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 ~~T~~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.)

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) ladn 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 head 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 termal 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.)

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 ~~T~~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

a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.

~~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.

~~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~~. 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.

~~c.~~ d. Structural ~~S~~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.

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. 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).

~~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, i~~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.

~~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.

~~Protection of the~~ Shoreline Protection – Policies

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, the uses to be protected, 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) 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 of erosion control projects.

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, ~~or~~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 protect~~ive~~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 protect~~ive~~ion 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
5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.
~~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.

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. 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.	N

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. 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.	N
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.	N
~~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.	N
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
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~~ *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.)	Y
~~l.~~ o. [renumbered but no proposed changes] (Proposed Amendments, pg. 7, para. o.)	n/a
~~m.~~p. [renumbered but no proposed changes] (Proposed Amendments, pg. 6, para. p.)	n/a
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 p~~*P*ublic *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.)	Y
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.)	N
~~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.	N
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.)	N
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* ~~T~~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.)	Y

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~~se~~ *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~~.	Y
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.	N
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* ~~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.	Y

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.	N
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 ~~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.*	Y
h. In the context of sea level rise adaptation, *it is likely that myriad* innovative approaches will *emerge,* likely includ~~e~~*ing* 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 though a process involving various stakeholders and local, regional, state and federal agencies.* (Proposed Amendments, pg. 10, para. h.)	Y
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.)	N
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.)	Y

k. Shoreline development and infrastructure, critical to public and environmental health and the region's economic prosperity, ~~are~~ *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* ~~will limit~~ the Bay Area's ability to meet environmental, public health, equity and economic goals.	Y
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.)	N
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~~ function~~ing~~. Moreover, further loss of tidal wetland will increase the risk of shoreline flooding. (Proposed Amendments, pg. 12, para. m.)	Y
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.)	Y
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 ~~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.*	Y

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 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 *public infrastructure and private* development that has regionally significant economic, cultural or social value, and can accommodate infill development.	Y
~~q. 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.~~	Y
q~~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. *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.*	Y
r~~s~~. 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 ~~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 *to* migrate inland, although relocating communities is very costly and may result in the displacement of neighborhoods. (Proposed Amendments, pg. 14, para. s.)	Y

~~s~~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~~ *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.	Y
~~t~~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 the Bay Plan if necessary to ensure that appropriate infill projects are encouraged.*	Y
~~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.~~ , *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.*	Y
Climate Change – Policies	

1. ~~When planning~~ Shoreline *area planning, and* ~~a~~ or designing larger shoreline projects, *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.*	Y
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 ~~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.	Y
3. *To the extent feasible,* ~~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 *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.)	Y
4. Whenever feasible and appropriate, effective, innovative sea level rise adaptation approaches should be encouraged.	N

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 ~~should~~ 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* ~~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. ~~The goals of the strategy should be to~~ *The entities that formulate the regional strategy are encouraged to consider the following strategies and goals:*	Y
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;	Y
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;	Y
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;	N
d. encourage innovative approaches to sea level rise adaptation;	N
e. Identify a framework for integrating the adaptation responses of multiple government agencies;	N
f. integrate regional mitigation measures designed to reduce greenhouse gas emission with regional adaptation measures designed to address the unavoidable impacts of climate change;	N
g. advance regional sustainability, encourage infill development and job creation, and provide diverse housing served by transit;	N
h. address any existing contamination and the implications of the contamination on water quality;	N

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;	N
j. identify actions to prepare and implement the strategy, including any needed changes in law; and	N
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.	N
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.* ~~when planning or regulating new development in areas vulnerable to future shoreline flooding new projects should be limited to~~:	Y
a. ~~minor~~ repairs of existing facilities or small projects that do not increase risks to public safety;	Y
b. transportation facilities, public utilities or other critical infrastructure that is necessary for ~~the continued viability of~~ existing *and appropriately planned future* development;	Y
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;* ~~; (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;~~	Y
d. redevelopment that will remediate existing environmental degradation or contamination particularly on closed military bases, *or* ~~if the re~~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* ~~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.)	Y

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*	Y
f. public parks, natural resource restoration or environmental enhancement projects~~;~~.	N
~~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.~~	N
Safety of Fills -- Findings	
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 ~~T~~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.)	Y
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) ladn 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 casued by the "greenhouse effect," the long term warming of the earth's surface from head 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 termal 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.)	N
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.	N
4. Adequate measures should be provided ~~T~~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, n*ew 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 widen~~t~~ing to support additional levee height so that no fill for levee widening is placed in the Bay.	Y
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.~~	N
~~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~~so ~~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 hazardsshoreline flooding.~~	Y
~~Protection of the~~ **Shoreline Protection – Findings**	
a. Well designed shoreline protection projects, such as levees, wetlands, or riprap, can prevent shoreline erosion and damage from flooding.	N
~~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, su~~a~~ch as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.	Y

~~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~~. 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.	N
~~c.~~ d. Structural ~~S~~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.	N
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. 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).	N
~~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, i~~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.	N
~~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.	N
~~Protection of the~~ Shoreline Protection – Policies	
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, the uses to be protected, 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) 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 of erosion control projects.	Y

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, ~~or~~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.	N
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.	N
4. Shoreline protect~~ive~~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 protect~~ive~~ion projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever practicable.	N
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.	N
Public Access – Findings	
f. Accele~~a~~rated 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.	Y
~~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).	N
~~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.	N

~~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.	N
Public Access – Policies	
5. Public access should be sited, designed, managed and maintained to avoid significant adverse impacts from sea level rise and shoreline flooding.	N
~~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.	N