

San Francisco Bay Conservation and Development Commission

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April 13, 2018

TO: Bay Fill Working Group Committee Members

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SUBJECT: Fill for Habitat Scope and Goal
(For Bay Fill Working Group consideration on April 19, 2018)

Background

On July 20, 2017, as part of the rising sea level adaptation work, the Commission voted to initiate a process to amend the San Francisco Bay Plan (Bay Plan) in order “to address Bay fill in habitat projects” by updating various policies to address the ramifications of climate change; specifically:

- Fish, Other Aquatic Organisms and Wildlife
- Tidal Marshes and Tidal Flats
- Subtidal Areas
- Dredging
- Protection of the Shoreline, and
- Public Access (potentially)

At the most recent Bay Fill Working Group meeting on March 15, 2018, members discussed the draft goal of the process:

Amend the Bay Plan to better address the planning, design, and permitting of necessary fill for habitat creation, restoration, enhancement and protection ~~of~~ ~~the~~ ~~nature-based soft shoreline~~ projects in the San Francisco Bay, to increase the region’s resilience to rising seas using the best available science.

The discussion raised the question of what types of projects fall within the category of “habitat restoration” and whether it is necessary to define or eliminate the phrase “nature-based soft shoreline projects” in the goal and scope of the project.

This memo clarifies the distinction between habitat restoration and what is commonly referred to as nature-based soft shoreline projects by reviewing BCDC law and policies, and other relevant examples and initiatives to inform the question of whether they represent a subset of habitat restoration projects.

Questions for the work group to consider:

1. What types of projects would have been included in 'nature-based soft shoreline' projects that would not be included in 'habitat restoration' projects, i.e., what are the potential consequences of restricting this amendment to habitat restoration, enhancement, creation and protection?
2. How should we define habitat restoration, enhancement, creation, or protection? For example, should the 'majority' of the project be habitat-focused and/or should the basic project purpose be habitat-focused? Is creating habitat (e.g. wetland, oyster reefs, dunes, eelgrass) where it never previously existed considered habitat restoration?
3. What types of projects could be included in variations of those definitions, e.g., marsh restoration, including mounds, thin layer placement, toe protection, levee breaches; beach nourishment; eel grass plantings; oyster reefs; living shorelines; transitional habitat or horizontal levees?
4. What is an acceptable level of impacts to existing habitats types for the long-term preservation of other habitat types?
5. Are "living shorelines," i.e., utilizing natural materials such as rock, wood, and vegetation to stabilize the shoreline, considered part of habitat restoration or enhancement? Does it matter what the natural shoreline stabilization project is protecting, e.g., adjacent habitat versus development or infrastructure? For shoreline protection projects that include habitat features, when does the basic project purpose (e.g. flood protection) become another (e.g. habitat)?

Defining Habitat Restoration and Nature-Based Soft Shoreline Protection

Though the term "restoration" is mentioned throughout the San Francisco Bay Plan, it is not defined formally in either the Bay Plan nor the McAteer-Petris Act. The Bay Plan includes in its Climate Change policies the phrase "innovative sea level rise adaptation approaches"; as well the Shoreline Protection policies that favor the integration of shoreline protection with enhancement of Bay ecosystems (see below for BCDC policies). Shoreline Protection Finding C gives examples of structural shoreline protection as "riprap, levees, and seawalls"; and Finding F lists "tidal marshes" as the only example of a nonstructural shoreline protection method. However, "nature-based soft shoreline protection" is not specifically referred to in either the Bay Plan or the McAteer-Petris Act.

Various other agencies and organizations have tried to define habitat restoration and soft shoreline or non-structural shoreline protection for policy and programmatic purposes. For example, the San Francisco Bay Subtidal Habitat Goals Report, a multi-agency effort supported by the Coastal Conservancy, NOAA's National Marine Fisheries Service, and the Commission, defines restoration to include "creating, enhancing, remediating, and rehabilitating habitat." A few other relevant examples include recent state legislation, the San Francisco Bay Restoration Authority (Restoration Authority), National Oceanic and Atmospheric Administration's (NOAA) Living Shoreline Report, the State of Maryland, and the Nature Conservancy (TNC).

First, through California Senate Bill 379 (2015), which required that the safety element of city and county general plans be reviewed and updated as necessary to address climate adaptation and resiliency strategies applicable to that city or county, “natural infrastructure” was defined as:

“the preservation or restoration of ecological systems, or utilization of engineered systems that use ecological processes, to increase resiliency to climate change, manage other environmental hazards, or both. This may include, but is not limited to, floodplain and wetlands restoration or preservation, combining levees with restored natural systems to reduce flood risk, and urban tree planting to mitigate high heat days.”

Second, the Restoration Authority is authorized by Section 66704(b) of the San Francisco Bay Restoration Authority Act to (Restoration Act) fund projects that “restore, protect, or enhance tidal wetlands, managed ponds, or natural habitats” through money raised by the Measure AA parcel tax. The Restoration Authority defines natural habitats as those “consistent with existing guidance on baylands, riparian, and subtidal habitats” and refers applicants to relevant local and regional plans such as the Baylands Ecosystem Habitat Goals Update, the Comprehensive Conservation and Management Plan, and the San Francisco Subtidal Habitat Goals Report; amongst others. Per Section 66704.5(b) of the Restoration Act, projects eligible for funding can include those with flood protection and public access features that meet the above definition. These features are considered part of the project if they are included in the plan, environmental documents, and/or permits for the associated habitat project. For example, the Measure AA grant guidelines note that under this definition closing a trail gap or extending a levee are eligible for restoration funding as long as they are part of a habitat restoration project.

Third, NOAA’s “Guidance for Considering the Use of Living Shorelines” report (2015)¹ notes that a range of shoreline stabilization techniques are encompassed in the term “living shoreline”; and defines it as follows:

“Living shoreline is a broad term that encompasses a range of shoreline stabilization techniques along estuarine coasts, bays, sheltered coastlines, and tributaries. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g. oyster reefs or rock sills) for added stability. Living shorelines maintain continuity of the natural land–water interface and reduce erosion while providing habitat value and enhancing coastal resilience.”

The report distinguishes between natural methods (such as native oyster shell reefs) versus nature-based (for example, reef balls or rocks where they do not naturally occur) in identifying a continuum of purely natural (such as a wetland) to hybrid (such as combining plantings with a rock sill) to grey (a

¹NOAA, 2015. Guidance for Considering the Use of Living Shorelines. Accessed at: https://www.habitatblueprint.noaa.gov/wp-content/uploads/2018/01/NOAA-Guidance-for-Considering-the-Use-of-Living-Shorelines_2015.pdf

seawall) methods. The continuum identified is based on the Systems Approach to Geomorphic Engineering (SAGE) developed by a number of federal agencies, including the U.S. Army Corps of Engineers.²

Fourth, the State of Maryland's Living Shorelines Act of 2008 states "Improvements to protect a person's property against erosion shall consist of non-structural shoreline stabilization measures (i.e. living shorelines) except where the person can demonstrate such measures are not feasible, or where mapping indicates areas that have been deemed appropriate for structural shoreline stabilization measures." Living shorelines are defined as "...a suite of techniques which can be used to minimize coastal erosion and maintain coastal process."

Finally, in 2017, The Nature Conservancy (TNC) and Point Blue worked with stakeholders in the Bay Area and used the SB 379 definition of natural infrastructure (above) to develop a revised working definition for their report³:

"For the purposes of this study, 'Natural shoreline infrastructure for adaptation' means using the natural ecological systems or processes to reduce vulnerability to climate change related hazards while increasing the long-term adaptive capacity of coastal areas by perpetuating or restoring ecosystem benefits."

² SAGE, 2015. Natural and Structural Measures for Shoreline Stabilization. Accessed at: <https://coast.noaa.gov/data/digitalcoast/pdf/living-shoreline.pdf>

³ NOAA, TNC, Point Blue, et. al., 2017. Case Studies of Natural Shoreline Infrastructure in Coastal California: A Component of Identification of Natural Infrastructure Options for Adapting to Sea Level Rise.

Examples of projects by definition

	“Habitat restoration”	“Habitat enhancement”	“Habitat creation”	“Nature-based shoreline protection”
<p>Peyton Slough Shoreline Stabilization Project (pending)</p> <p>Summary: Shoreline protection (riprap) to prevent erosion of contaminated lands and adjacent marsh</p>				?
<p>Gateway Park (pending):</p> <p>Summary: Shoreline protection features along most southern shoreline areas (south of I-80) to minimize erosion; addition of 2 to 10 feet of fill on the entire south side of the Park (south of I-80) to counter sea level rise</p>				?
<p>Mission Rock (pending)</p> <p>Note: The project proponents have not yet provided detail on shoreline protection measures under consideration.</p>				?

	"Habitat restoration"	"Habitat enhancement"	"Habitat creation"	"Nature-based shoreline protection"
<p>San Leandro Treatment Wetland (Measure AA)</p> <p>Summary: Conversion of a 4.3-acre wastewater storage basin adjacent to San Leandro's Water Pollution Control Plant to a multi-benefit treatment wetland, and 2) develop a shoreline resiliency and tidal marsh restoration vision for the surrounding area</p>	X		X	X
<p>North Bay Wetland-Upland Transition Zone Habitat Restoration (Measure AA)</p> <p>Summary: Restore 1.31 linear miles of critical wetland-upland transition zone habitat at four sites</p>	X			
<p>Suisun Marsh Montezuma Tidal and Seasonal Wetlands Restoration (Measure AA)</p> <p>Summary: Tidal and seasonal wetland restoration on 630 acres of diked baylands and enhancement</p>	X	X		
<p>Alameda Encinal Dune Restoration and Public Access (Measure AA)</p> <p>Summary: Removal of shoreline debris, restoration of dune habitat, and creation of new trail and water access</p>	X	X		

	“Habitat restoration”	“Habitat enhancement”	“Habitat creation”	“Nature-based shoreline protection”
<p>Hill Slough (BCDC 2017)</p> <p>Summary: Restore 850 acres from managed wetlands to tidal wetland habitat, assisting in the recovery of state and federally-listed species that inhabit Suisun Marsh; enhance the managed wetland habitat in two portions of the site; improve mosquito abatement; raise and widen Grizzly Island Road to improve its safety, provide bicycle access and reduce flood risk; and provide additional public access to the Hill Slough Wildlife Area</p>	X	X		X
<p>Sonoma Creek (BCDC 2016)</p> <p>Summary: Restore tidal flow into the marsh and construct a habitat “transition ramp” in place of a traditional levee design to provide flood protection</p>	X			X
<p>San Francisco Bay Living Shoreline Project (BCDC 2015)</p> <p>Summary: Eelgrass restoration and monitoring; native oyster restoration activities at Corte Madera Ecological Reserve; Eden Landing Ecological Reserve; Eastshore State Park</p>	X		X	X

	“Habitat restoration”	“Habitat enhancement”	“Habitat creation”	“Nature-based shoreline protection”
<p>Cullinan Ranch (BCDC 2010)</p> <p>Summary: Restore approximately 1,549 acres of tidal habitat and 26 acres of associated upland habitat</p>	X			
<p>Middle Harbor Enhancement Project (2000)</p> <p>Summary: 80-acre subtidal habitat restoration and enhancement, including eelgrass</p>	X	X		
<p>Hamilton Field (BCDC 1996)</p> <p>Summary: Restore wetland habitat using dredged sediment</p>	X			
<p>Crown Memorial State Beach nourishment (BCDC 1982)</p> <p>Summary: Placement of 82,600 cubic yards of sand restored the beach and dune system</p>	X			
<p>Examples of other past projects?</p>				

Staff Analysis

Based on these definitions and examples, the reference to “nature-based soft shoreline projects” could pull in projects that shouldn’t be included in this amendment, e.g., projects where the basic project purpose is to protect development and/or infrastructure. This topic will be addressed in a later Bay Plan amendment that will analyze innovative shoreline protection techniques. Removing “nature-based soft shoreline projects” from the project purpose would not exclude projects that we would want to include in this BPA because typically those desirable projects also include a habitat restoration, enhancement, creation, or protection component.

Applicable San Francisco Bay Plan Policies⁴

Fish, Aquatic Organisms, and Wildlife Policy 3:

In reviewing or approving habitat restoration programs the Commission should be guided by the recommendations in the Baylands Ecosystem Habitat Goals report and should, where appropriate, provide for a diversity of habitats to enhance opportunities for a variety of associated native aquatic and terrestrial plant and animal species

Fish, Aquatic Organisms, and Wildlife Policy 5:

The Commission may permit a minor amount of fill or dredging in wildlife refuges, shown on the Plan Maps, necessary to enhance fish, other aquatic organisms and wildlife habitat or to provide public facilities for wildlife observation, interpretation and education.

Tidal Marshes and Tidal Flats Finding C:

Wetlands are transitional areas between upland and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Examples of wetland habitats associated with the Bay include tidal flats, tidal marshes, lagoons, managed wetlands, agricultural baylands, salt ponds, wastewater treatment ponds, and riparian forests.

Tidal Marshes and Tidal Flats Finding 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 Policy 4:

Where 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

⁴ May not be a comprehensive list.

Baylands Ecosystem Habitat Goals report, around 65,000 acres of areas diked from the Bay should be restored to tidal action to maintain a healthy Bay ecosystem on a regional scale. Regional ecosystem targets should be updated periodically to guide conservation, restoration, and management efforts that result in a Bay ecosystem resilient to climate change and sea level rise. Further, local government land use and tax policies should not lead to the conversion of these restorable lands to uses that would preclude or deter potential restoration. The public should make every effort to acquire these lands for the purpose of habitat restoration and wetland migration.

Tidal Marshes and Tidal Flats Policy 6:

Any ecosystem 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) 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 (i) site characterization. If success criteria are not met, appropriate adaptive measures should be taken.

Tidal Marshes and Tidal Flats Policy 8:

Based on scientific ecological analysis and consultation with the relevant federal and state resource agencies, a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat if the Commission finds that no other method of enhancement or restoration except filling is feasible.

Subtidal Areas Subtidal Policy 3:

Subtidal restoration projects should be designed to: (a) promote an abundance and diversity of fish, other aquatic organisms and wildlife; (b) restore rare subtidal areas; (c) establish linkages between deep and shallow water and tidal and subtidal habitat in an effort to maximize habitat values for fish, other aquatic organisms and wildlife; or (d) expand open water areas in an effort to make the Bay larger.

Subtidal Areas Subtidal Policy 4:

Any subtidal 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 scientific need for the project; (b) the effects of relative sea level rise; (c) the impact of the project on the Bay's sediment budget; (d) localized sediment erosion and accretion; (e) the role of tidal flows; (f) potential invasive species introduction, spread and

their control; (g) rates of colonization by vegetation, where applicable; (h) the expected use of the site by fish, other aquatic organisms and wildlife; and (i) characterization of and changes to local bathymetric features. If success criteria are not met, corrective measures should be taken.

Subtidal Areas Subtidal Policy 5:

The Commission should continue to support and encourage expansion of scientific information on the Bay's subtidal areas, including: (a) inventory and description of the Bay's subtidal areas; (b) the relationship between the Bay's physical regime and biological populations; (c) sediment dynamics, including sand transport, and wind and wave effects on sediment movement; (d) areas of the Bay used for spawning, birthing, nesting, resting, feeding, migration, among others, by fish, other aquatic organisms and wildlife; and (e) where and how restoration should occur.

Subtidal Areas Subtidal Policy 6:

Based on scientific ecological analysis and consultation with the relevant federal and state resource agencies, a minor amount of fill may be authorized to enhance or restore fish, other aquatic organisms or wildlife habitat if the Commission finds that no other method of enhancement or restoration except filling is feasible.

Climate Change Policy 5⁵:

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

Climate Change Policy 6:

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

- 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.

Climate Change Policy 7:

Until a regional sea level rise adaptation strategy can be completed, the Commission should evaluate each project proposed in vulnerable areas on a case-by-case basis to determine the project's public benefits, resilience to flooding, and capacity to adapt to climate change impacts. The following specific types of projects have regional benefits, advance regional goals, and should be encouraged, if their regional benefits and their advancement of regional goals outweigh the risk from flooding:

- d. a natural resource restoration or environmental enhancement project.

⁵ Note that revising Climate Change Policies are not included in the scope of this Bay Plan amendment.

Shoreline Protection Finding C:

Structural shoreline protection, such as riprap, levees, and seawalls, often requires periodic maintenance and reconstruction.

Shoreline Protection Finding F:

Nonstructural shoreline protection methods, such as tidal marshes, can provide effective flood control but are typically effective for erosion control only in areas experiencing mild erosion. In some instances, it may be possible to combine habitat restoration, enhancement or protection with structural approaches to provide protection from flood and control shoreline erosion, thereby minimizing the shoreline protection project's impact on natural resources.

Shoreline Protection Policy 4:

Whenever feasible and appropriate, shoreline protection projects should include provisions for nonstructural methods such as marsh vegetation and integrate shoreline protection and Bay ecosystem enhancement, using adaptive management. Along shorelines that support marsh vegetation, or where marsh establishment has a reasonable chance of success, the Commission should require that the design of authorized protection projects include provisions for establishing marsh and transitional upland vegetation as part of the protective structure, wherever feasible.

Dredging Finding H:

In the past, only small amounts of dredged material have been disposed at upland and diked baylands around the Bay. Fortunately, more reuse options are becoming available for dredged material disposal. These sites include Hamilton Wetlands Project in Marin County with a capacity of over 10 million cubic yards and the Montezuma Wetlands Project in Solano County with a capacity of 17 million cubic yards. Inclusion of the adjacent Bel Marin Keys parcel would likely more than double the capacity of the Hamilton project. Dredged material could be used at these sites to restore thousands of acres of wetlands. However, as identified in the Commission's Diked Historic Baylands Study and the San Francisco Bay Area Wetlands Ecosystem Goals Project diked baylands often contain seasonal wetlands, provide the primary opportunity for enhancement of seasonal wetlands or restoration of tidal wetlands, and can provide other important habitat functions that need to be taken into account as part of dredged material reuse projects to avoid losing critical natural habitat.

Dredging Finding N:

Baywide studies would help determine the need for, appropriate locations for, and potential effects of in-Bay disposal for eelgrass or other shallow water habitat enhancement or restoration. The Commission has approved a pilot project, the Oakland Middle Harbor enhancement project, that could help to determine the feasibility of eelgrass or other shallow water habitat enhancement or restoration in the Bay.

Dredging Policy 11:

- A. A project that uses dredged material to create, restore, or enhance Bay or certain waterway natural resources should be approved only if:
1. The Commission, based on detailed sites-specific studies, appropriate to the size and potential impacts of the project, that include, but are not limited to, site morphology and physical conditions, biological considerations, the potential for fostering invasive species, dredged material stability, and engineering aspects of the project, determines all of the following:
 - a) the project would provide, in relationship to the project size, substantial net improvement in habitat for Bay species;
 - b) no feasible alternatives to the fill exist to achieve the project purpose with fewer adverse impacts to Bay resources;
 - c) the amount of dredged material to be used would be the minimum amount necessary to achieve the purpose of the project;
 - d) beneficial uses and water quality of the Bay would be protected; and
 - e) there is a high probability that the project would be successful and not result in unmitigated environmental harm;
 2. The project includes an adequate monitoring and management plan and has been carefully planned, and the Commission has established measurable performance objectives and controls that would help ensure the success and permanence of the project, and an agency or organization with fish and wildlife management expertise has expressed to the Commission its intention to manage and operate the site for habitat enhancement or restoration purposes for the life of the project;
 3. The project would use only clean material suitable for aquatic disposal and the Commission has solicited the advice of the San Francisco Bay Regional Water Quality Control Board, the Dredged Material Management Office and other appropriate agencies on the suitability of the dredged material;
 4. The project would not result in a net loss of Bay or certain waterway surface area or volume. Any offsetting fill removal would be at or near as feasible to the habitat fill site;

5. Dredged material would not be placed in areas with particularly high or rare existing natural resource values, such as eelgrass beds and tidal marsh and mudflats, unless the material would be needed to protect or enhance the habitat. The habitat project would not, by itself or cumulatively with other projects, significantly decrease the overall amount of any particular habitat within the Suisun, North, South, or Central Bays, excluding areas that have been recently dredged;
 6. The Commission has consulted with the California Department of Fish and Game, the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service to ensure that at least one of these agencies supports the proposed project; and
 7. After a reasonable period of monitoring, if either:
 - a) the project has not met its goals and measurable objectives, and attempts at remediation have proven unsuccessful, or
 - b) the dredged material is found to have substantial adverse impacts on the natural resources of the Bay, then the dredged material would be removed, unless it is demonstrated by competent environmental studies that removing the material would have a greater adverse effect on the Bay than allowing it to remain, and the site would be returned to the conditions existing immediately preceding placement of the dredged material.
- B. To ensure protection of Bay habitats, the Commission should not authorize dredged material disposal projects in the Bay and certain waterways for habitat creation, enhancement or restoration, except for projects using a minor amount of dredged material, until:
1. Objective and scientific studies have been carried out to evaluate the advisability of disposal of dredged material in the Bay and certain waterways for habitat creation, enhancement and restoration. Those additional studies should address the following:
 - a) The Baywide need for in-Bay habitat creation, enhancement and restoration, in the context of maintaining appropriate amounts of all habitat types within the Bay, especially for support and recovery of endangered species; and
 - b) The need to use dredged materials to improve Bay habitat, the appropriate characteristics of locations in the Bay for such projects, and the potential short-term and cumulative impacts of such projects; and

2. The Commission has adopted additional Baywide policies governing disposal of dredged material in the Bay and certain waterways for the creation, enhancement and restoration of Bay habitat, which narratively establish the necessary biological, hydrological, physical and locational characteristics of candidate sites; and
3. The Oakland Middle Harbor enhancement project, if undertaken, is completed successfully.

Public Access Finding B:

Access to the Bay allows the public to discover, experience and appreciate the Bay's natural resources and can foster public support for Bay resource protection, including habitat acquisition and restoration. Public access can provide for recreational activities, educational and interpretive opportunities, and means for alternative transportation.

Public Access Policy 3:

Public access to some natural areas should be provided to permit study and enjoyment of these areas. However, some wildlife are sensitive to human intrusion. For this reason, projects in such areas should be carefully evaluated in consultation with appropriate agencies to determine the appropriate location and type of access to be provided.

Public Access Policy 4:

Public access should be sited, designed and managed to prevent significant adverse effects on wildlife. To the extent necessary to understand the potential effects of public access on wildlife, information on the species and habitats of a proposed project site should be provided, and the likely human use of the access area analyzed. In determining the potential for significant adverse effects (such as impacts on endangered species, impacts on breeding and foraging areas, or fragmentation of wildlife corridors), site specific information provided by the project applicant, the best available scientific evidence, and expert advice should be used. In addition, the determination of significant adverse effects may also be considered within a regional context. Siting, design and management strategies should be employed to avoid or minimize adverse effects on wildlife, informed by the advisory principles in the Public Access Design Guidelines. If significant adverse effects cannot be avoided or reduced to a level below significance through siting, design and management strategies, then in lieu public access should be provided, consistent with the project and providing public access benefits equivalent to those that would have been achieved from on-site access. Where appropriate, effects of public access on wildlife should be monitored over time to determine whether revisions of management strategies are needed.

Public Access Policy 13:

Public access should be integrated early in the planning and design of Bay habitat restoration projects to maximize public access opportunities and to avoid significant adverse effects on wildlife.

Public Access Policy 14:

The Commission should continue to support and encourage expansion of scientific information on the effects of public access on wildlife and the potential of siting, design and management to avoid or minimize impacts. Furthermore, the Commission should, in cooperation with other appropriate agencies and organizations, determine the location of sensitive habitats in San Francisco Bay and use this information in the siting, design and management of public access along the shoreline of San Francisco Bay.

DRAFT