

*K. Hadley
Do Not Remove*

ENVIRONMENTAL ASSESSMENT

June 1996

Crissy Field Plan Golden Gate National Recreation Area



The fundamental purpose of all units of the National Park System is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.—From National Park Service Organic Act, 1916 as amended 1988.

**Environmental Assessment for
Crissy Field Plan**

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Section 1.0
Purpose and Need
for the Proposed Action

1.1 Introduction

1.1.1 Summary of the Proposed Action

The 100-acre Crissy Field site is situated on the shore of San Francisco Bay, the northernmost waterfront of the Presidio of San Francisco (Presidio). The project area occupies a flat plain bounded by the bay to the north, Mason Street to the south, Lyon Street to the east, and a cluster of structures to the west of the former U.S. Coast Guard station. It is a unique site in very close proximity to a highly urbanized area.

The rehabilitation of Crissy Field, from the broad expanse of deteriorating surfaces and restricted access, will be accomplished through the restoration of historic military airfield elements, as well as reintroduction of ecological systems that once dominated and shaped the landscape of the site. The overall goal of the site plan is to accomplish this cultural and ecological restoration of the site consistent with the National Park Service (NPS) mission of conservation, while maintaining and enhancing Crissy Field as a "people place", which welcomes a variety of recreational activities.

1.1.2 Site Significance

The Presidio is a valuable component of the Golden Gate National Recreation Area (GGNRA) because of its open space, unique ecological characteristics and potential, distinctive historic features, and views of San Francisco and its bay and ocean (Figure 1-1). As a part of the Presidio, Crissy Field exemplifies each of these qualities.

Crissy Field is also an important area for various types of recreational uses. It is a staging and launch point for world class boardsailing activities; a connection between Marina Green and Fort Point for pedestrians and bicyclists; and a secure and safe place for jogging, bird watching, dog walking, and general enjoyment of the shoreline. Crissy Field is also a popular location for special events. Because much of Crissy Field is currently inaccessible to the public, an opportunity exists for greatly enhancing use of Crissy Field by improving its recreational amenities and incorporating features that will unify Crissy Field with the rest of the Presidio.

Crissy Field has existing dune habitat associated with the sandy beach on the northern edge of the area, including the last remnant of native dune grass within San Francisco Bay and the most intact bay foredune community on the San Francisco Peninsula. A portion of the dunes is currently being restored, and the potential exists for dune restoration on a larger scale. Additionally, Crissy Field has considerable potential as a tidal marsh restoration site. Before Crissy Field was developed for military use, a large tidal marsh extended over much of this area. Favorable conditions could be recreated at Crissy Field for a tidal marsh that would have both educational and ecological value. Especially considering the fact that the San Francisco Peninsula is a densely inhabited urban area, this opportunity for restoration of natural systems is rare.

In the 1920s, a grass-surfaced airfield at Crissy Field served as the first Army coastal defense airfield on the Pacific coast and the only continually operating airfield in the western United States. Historic structures and the generally intact footprint of the former airfield still exist at Crissy Field. The existing airfield area includes several layers of construction representing continual growth of the Presidio through time. An existing large asphalt runway is the last of a series of landing strips that became successively larger and longer over three distinct periods of airfield usage starting with its initial designation as a military airfield in 1919 and ending with its final closure in 1974. Remaining within the existing airfield area are all of the original hangars, support structures, and other elements of the early airfield that not only contributes to two National Historic Landmarks but is of national significance in its own right as the site of numerous aviation milestones, the first air coast defense station on the Pacific Coast, and the only such airfield in the entire nation that retains integrity.

An excellent opportunity exists to enhance the historic qualities of the airfield and to provide interpretive education opportunities by removal of some of the later-constructed structures in the airfield area and restoration of the 1920s grass landing and takeoff field.

Additionally, the San Francisco Bay waterfront location offers spectacular views of San Francisco Bay, the Golden Gate Bridge, and the city of San Francisco. Crissy Field itself is a prominent feature that can be viewed by those entering San Francisco from the bay or the Golden Gate Bridge.

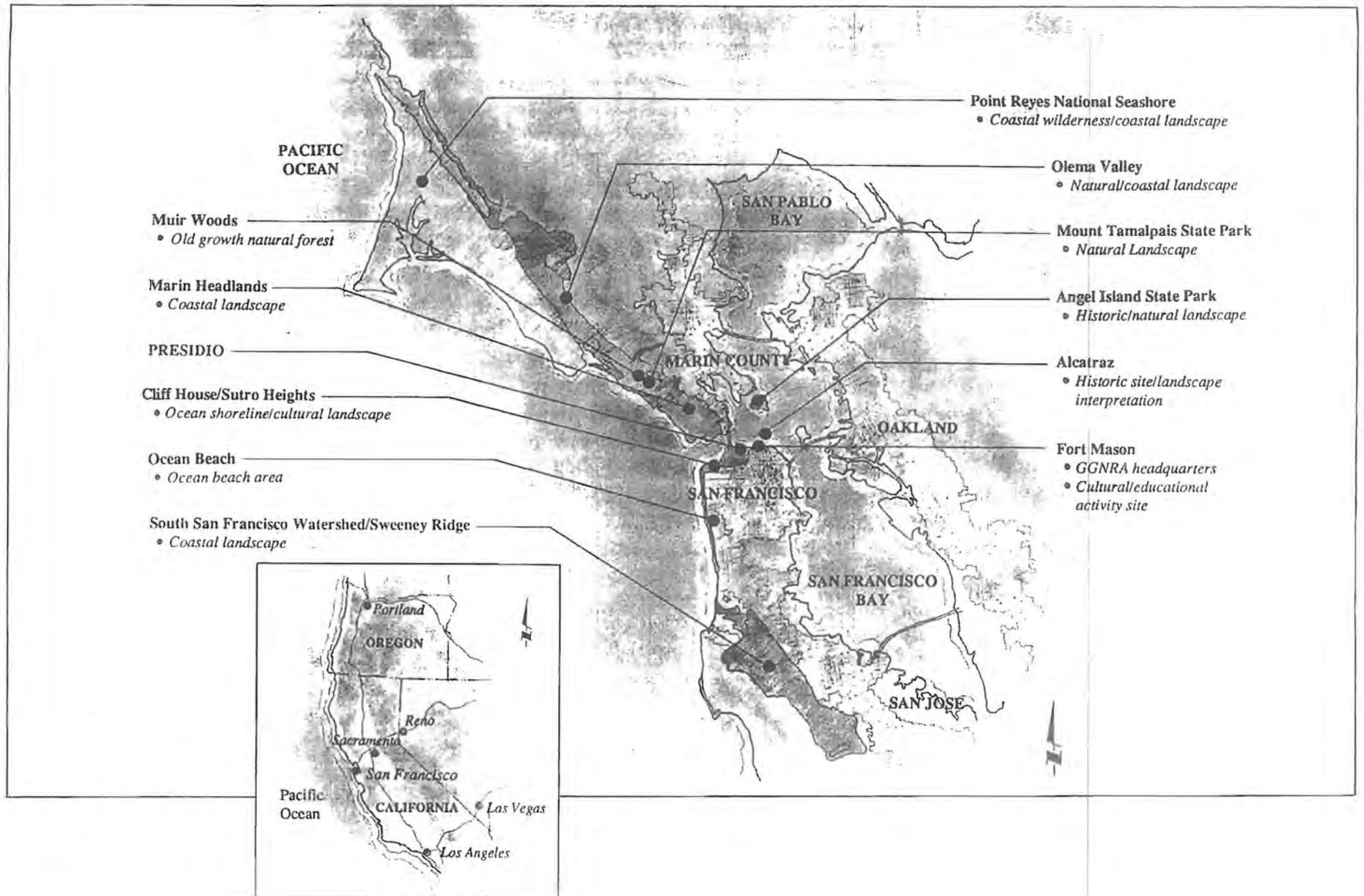


Figure 1-1
Golden Gate National Recreation Area Context

1.1.3 Scope of the Proposed Action and Environmental Assessment

The Proposed Action consists of a site plan for the development of the approximately 100-acre portion of Crissy Field generally including Mason Street and the site to the north. Two site plan alternatives and a No-Action Alternative are described and evaluated for site improvements that are based on the NPS General Management Plan Amendment for the Presidio of San Francisco (GMPA) approved in 1994 (Figure 1-2). The site plan alternatives were formulated based on a public involvement process that gathered input from numerous community organizations, public agencies, and private citizens.

This proposed plan does not include the uses of historic structures south of Mason Street, the former U.S. Coast Guard station, or the water shuttle described in the GMPA. Plans for these components will be developed in the future once tenants, uses, and programs are selected for adjacent buildings (e.g., hangars) and the feasibility of a water shuttle is determined. Intersection improvements at the east entrance will be fully addressed in future plans for Doyle Drive reconstruction.

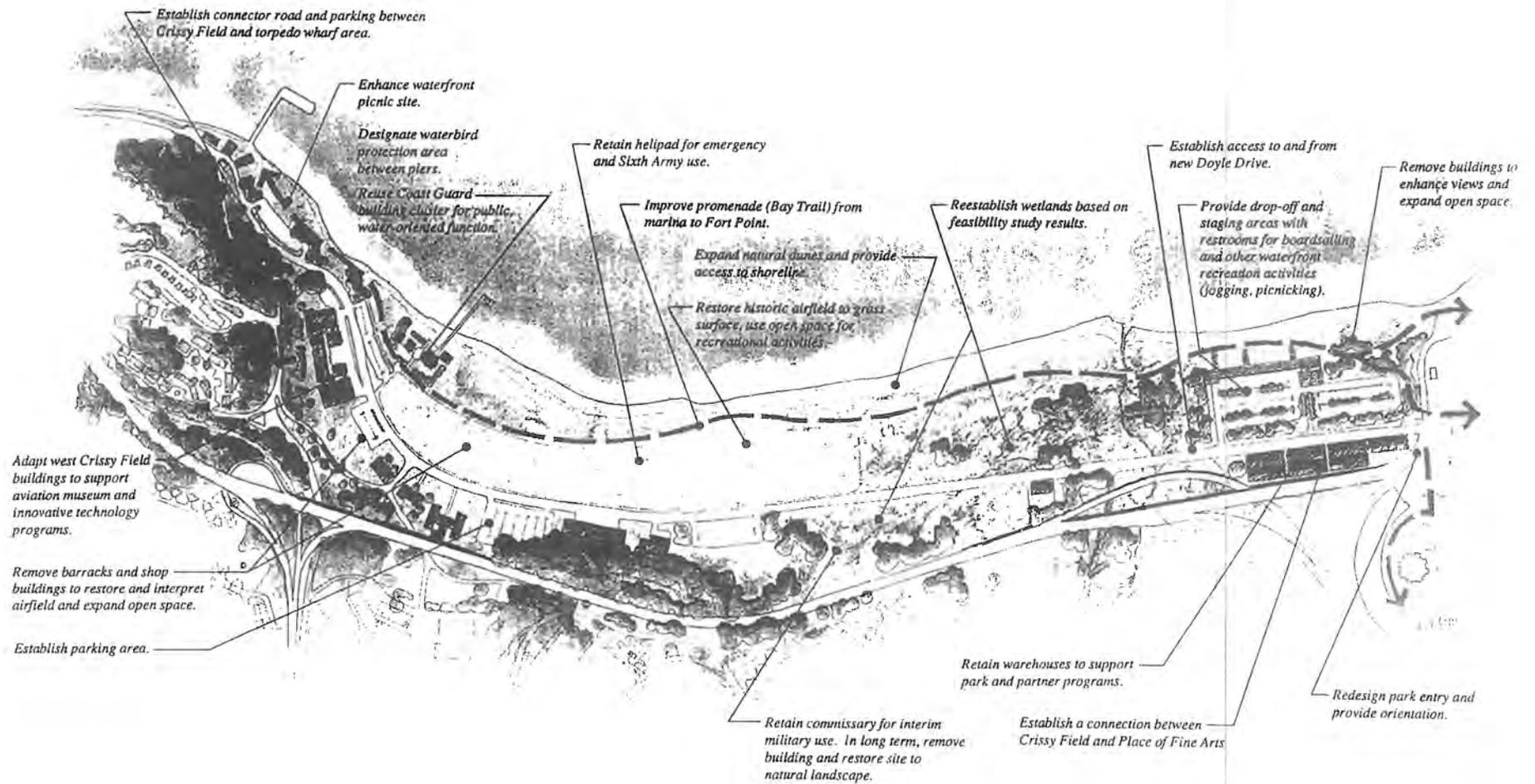
This environmental assessment (EA) is a project-level document that evaluates the environmental consequences associated with the Proposed Action and alternatives. It includes a full discussion of environmental impacts that would be induced by implementation of either of the alternatives and environmental commitments to avoid or reduce these effects.

This EA is based on the GMPA, a planning document that provides guidelines for NPS regarding the management, use, and development of the Presidio for the next 15 years. The GMPA was analyzed in its entirety in a final environmental impact statement (EIS), which was approved in September 1994 (National Park Service 1994a) and can be viewed at park headquarters, Building 201 Fort Mason, San Francisco, California. The EIS is incorporated by reference into this EA.

Because this EA for Crissy Field is tiered from the GMPA EIS, the broader program-level analysis contained in the EIS is not repeated in this EA.

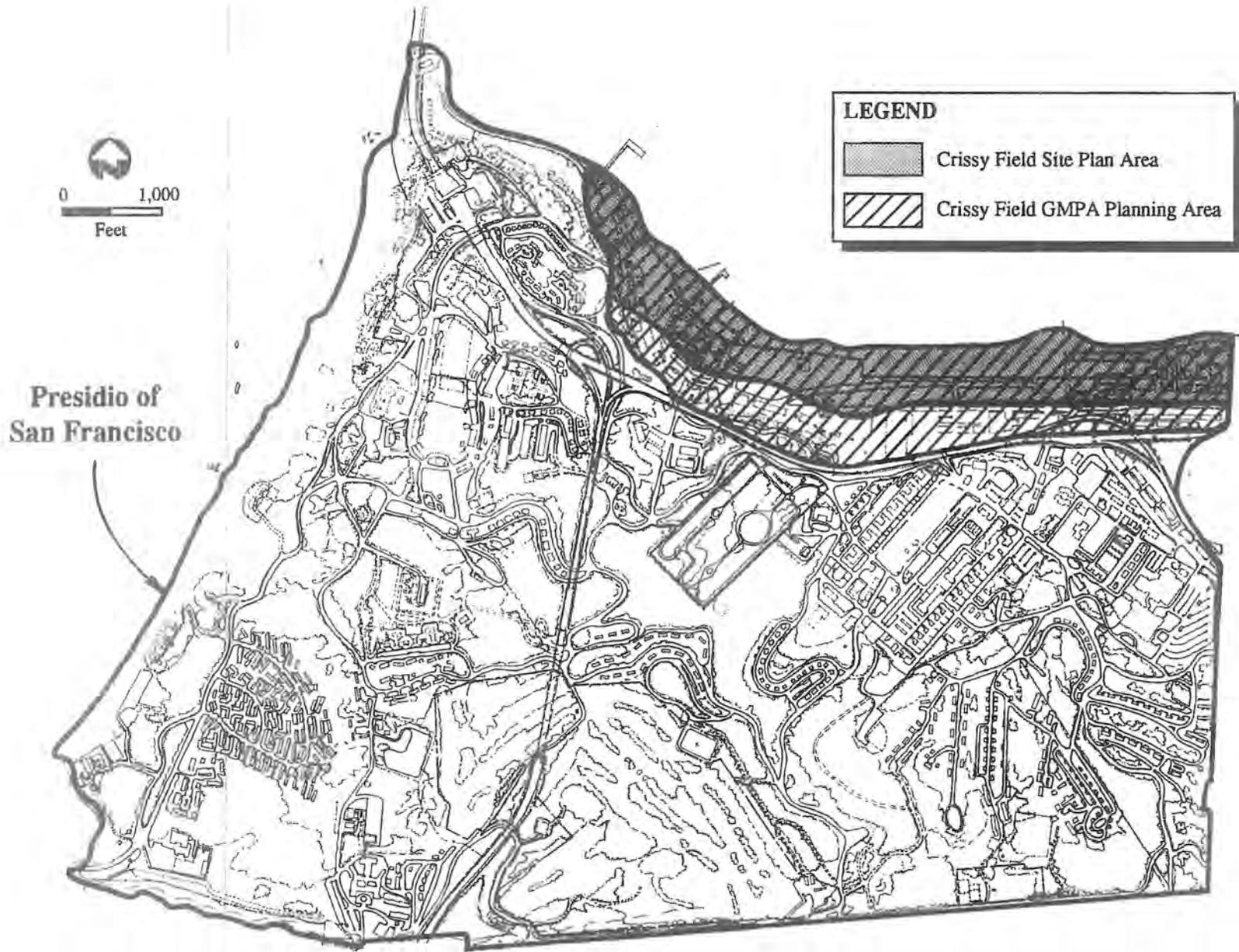
However, some of the most relevant information is presented in summary form. This EA has a narrower and more detailed focus than the GMPA EIS, concentrating on the specific issues associated with the development of Crissy Field according to the site plan alternatives. This EA has been prepared in compliance with the requirements of the National Environmental Policy Act (NEPA) and the regulations of the Council on Environmental Quality.

Figure 1-3 shows the relationship of the specific Crissy Field site plan area, included in this Proposed Action, to the larger Crissy Field planning area and the entire Presidio, as shown in the GMPA.



Approved July 1994

Figure 1-2
GMPA Crissy Field Planning Area Concept



**Figure 1-3
Planning Unit Boundaries**

1.2 Purpose and Need

1.2.1 Plan Objectives

The GMPA for the Presidio envisions a global center dedicated to addressing the world's most critical environmental, social, and cultural challenges and a working laboratory to create models of environmental sustainability. It calls for a setting to provide a respite for reflection and renewal.

The underlying purpose of this action is to implement development of the northern portion of Crissy Field consistent with the planning area concept and actions described for Crissy Field in the approved GMPA. The GMPA vision for Crissy Field is that it become the "front yard" of the Presidio:

The Bay, the long stretch of shoreline ideal for all forms of movement and recreation, and the impressive views all contribute to experiences that draw visitors from throughout the world. Crissy Field will be managed to enhance the setting for those experiences while rehabilitating and preserving important historic resources and natural systems. (National Park Service 1994b.)

The GMPA specifies that the design for Crissy Field will incorporate a grass landing strip restored to its historic appearance. It also specifies that, based on results of a feasibility study, a tidal marsh will be reestablished. The parallel processes of restoring cultural and ecological resources and accommodating existing recreational activities into an integrated and sustainable design are the single largest opportunity of the Crissy Field reclamation.

In developing the site plan consistent with the GMPA vision for Crissy Field, NPS seeks to achieve the following overall goal and objectives.

Goal: *Enhance the setting for recreation and visitor enjoyment while rehabilitating and preserving important historic resources and natural values.*

Objective 1: *Enhance the setting and opportunities for visitors and recreational and educational uses.*

This objective includes:

- retaining and enhancing important existing qualities of the site;
- providing parking improvements and site amenities for waterfront recreational activities;
- providing facilities such as restrooms, outdoor showers, bicycle racks, picnic tables, benches, and educational wayside exhibits;
- improving the Golden Gate Promenade (Promenade) to accommodate a variety of recreational uses and users;
- creating an appropriate park entry at the east entrance;
- designating space within the restored airfield to accommodate small to moderate-sized events;
- providing access to accommodate people with physical disabilities; and
- enhancing environmental and cultural educational opportunities by including hands-on education and volunteer stewardship opportunities.

Objective 2: *Enhance and expand existing natural resource values and capitalize on opportunities to restore dunes and a remnant of the historical tidal marsh.*

This objective includes:

- reestablishing an ecologically viable self-sustaining tidal marsh requiring a minimum of human intervention and providing high-quality educational and interpretive opportunities;
- providing for connection of the future restored riparian corridor to the marsh and allowing for future expansion of the marsh south of Mason Street;
- restoring and enhancing native plant communities, expanding the native dune community to allow viable biological and coastal processes to

PURPOSE AND NEED FOR THE PROPOSED ACTION

occur, removing non-native vegetation, and providing access through sensitive dunes along designated paths; and

- providing adequate protection for wildlife currently on the site and anticipated to occur as a result of planned improvements.

Objective 3: Preserve and enhance cultural resources.

This objective includes:

- restoring the historic grassy airfield to be consistent with the airfield's period of greatest significance (1920-1930) and
- protecting the historic and prehistoric archeological resources located on and adjacent to Crissy Field.

Objective 4: Improve transportation and circulation.

This objective includes:

- providing automobile access to the Torpedo Wharf area in a non-intrusive manner, reducing cut-through traffic, simplifying overall circulation patterns, and improving safety for all modes of transportation;
- providing parking, as defined in the GMPA, that supports uses of the site, while minimizing visual impact and maximizing compatibility with other plan elements and future recreation;
- establishing bike lanes along roadways to separate fast bicycle traffic from more leisurely travel, as well as from automobile traffic; and
- improving pedestrian connections to the east, west, and south.

Objective 5: Develop a sustainable design.

This objective includes:

- incorporating sustainable design practices such as incorporating native plant materials requiring low maintenance and providing habitat values, creating a self-sustaining landscape that minimizes maintenance needs, and using appropriate excavated materials onsite to create topographic variation and eliminate the need for offsite disposal;
- incorporating design features built of durable materials;
- eliminating unnecessary paving and impervious surfaces and removing excess asphalt, rubble, and concrete; and
- incorporating best management practices for stormwater management.

1.2.2 Existing Conditions

The following paragraphs briefly describe existing conditions and issues for those elements relevant to the objectives described above.

1.2.2.1 Recreational Setting and Opportunities

Existing conditions at Crissy Field are not consistent with the GMPA concept for this area. Crissy Field is the setting from which to enjoy expansive views and is a prominent site at the entrance to San Francisco from both land and water. However, much of Crissy Field has a derelict and transitional appearance, created by large areas of deteriorated concrete and asphalt, and fencing and building demolition.

A wide variety of recreational uses and a relatively high level of use exist at Crissy Field. Crissy Field in its current condition is a popular recreational destination. However, currently only two-thirds of the site plan area is accessible for public use. Other portions of the site are closed to public use.

Much of the open space currently accessible to the public is vegetated with weedy non-native grasses or has surfaces of asphalt, concrete, or hard-packed earth. The Promenade connection around the U.S. Coast Guard station is confusing and crosses through parking lots and access roads. The condition of the Promenade at the east and west ends of the site is poor and the trail at the east end is often buried by sand and storm debris following winter storms and high tides. Blowing sand is a problem in the East Beach parking area. Rubble covers about 3,100 linear feet of beach.

The site offers few amenities (such as restrooms, showers, benches, picnic tables, wind shelter, wayside exhibits) to support existing and proposed uses of the site. Trail connections to other areas of the Presidio and the city are not clear. Opportunities for interpretive education associated with the airfield and natural features of the site are limited. Opportunities to accommodate the growing interest in volunteer restoration activities at the site are currently limited to the relatively small natural area of dunes.

The current configuration of the helipad eliminates a large area from other uses.

1.2.2.2 Natural Resources

There is currently no tidal marsh at Crissy Field. The former tidal marsh that extended from this site constituted a portion of a 130-acre tidal marsh that was unique in the Bay Area. Similar to the fate of over 90% of California's wetlands, the former tidal marsh was completely obliterated. Between 1912 and 1915, the marsh was filled with sand pumped from offshore to provide a site for the 1915 Panama-Pacific International Exposition. Based on an evaluation of the feasibility of restoring a portion of this ecosystem at Crissy Field, it has been determined that marsh restoration is feasible and can provide an ecologically valuable, self-sustaining tidal marsh, requiring minimal human intervention and providing high-quality educational and interpretive opportunities and improved aesthetics.

With about 15 acres of Crissy Field covered with asphalt, concrete, or buildings undergoing removal, vegetated areas are limited to about 3 acres of natural dune and 18 acres of non-native grassland. In addition, there are a number of palm trees southwest of the Promenade along Mason Street and along the airstrip. A few Monterey pines, cypress trees, and eucalyptus trees

grow in clusters throughout the site plan area. Native plant communities at Crissy Field are small and ecologically separated from other natural communities. This limits wildlife habitat, as does the level of human activity that has occurred and is still occurring at Crissy Field. Offshore waterbird habitat is not protected. Although dunes are expanding in some areas north of the Promenade, in areas where the beach is covered with rubble or where development encroaches onto the beach, dunes are not able to form and sand blows onto the backshore areas.

1.2.2.3 Cultural Resources

Crissy Field contains substantial remnants of a grassy military airfield that was originally constructed in the 1920s. This airfield is a nationally significant historic resource because of its place in the history of military aviation. Although much of the open space and associated historic structures remain, later additions of paving and structures have damaged or obscured the historic airfield, and in its current condition it is very difficult to interpret. The building demolition program, in its final stages, has resulted in removal of structures not related to the airfield's period of significance, allowing for the restoration of its historic appearance, enhancing the historic context of the original Army Air Base and providing high-quality educational opportunities.

1.2.2.4 Parking, Transportation, and Circulation

Parking and traffic circulation at Crissy Field are also problematic. The oversized width of Mason Street and its straight alignment encourage excessive speeds and invite cut-through traffic by travelers wishing to avoid more crowded travel routes. These conditions on Mason Street are detrimental to recreational use of the site and are not conducive to pedestrian travel between Crissy Field and other parts of the Presidio. Duplicate alignments of Mason Street and secondary access routes provide unnecessary and confusing travelways through the site. No safe bicycle route through Crissy Field currently exists. Excessive paved areas at Crissy Field encourage its use as a site for special event and shuttle parking for activities that could be served by parking elsewhere on the Presidio away from the highly visible waterfront setting. The location of parking at the west end requires vehicle traffic to cross the Promenade.

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At the east end of the site, parking to serve recreational uses is spread out in an unstructured space with a variety of surfaces, much in badly deteriorated condition and not screened from view. Areas of parking at the east end are too close to the beach to allow for protection from storm wave overwash and are often buried beneath sand. Parking in this location also prevents the formation of dunes of sufficient size to capture blowing sand and provide protection for recreational facilities along the waterfront from storm waves.

1.2.3 Issues and Concerns

The issues and concerns described in this section were identified during public meetings, workshops, and scoping sessions concerning development of Crissy Field. They represent the challenges and opportunities associated with developing a plan that achieves multiple objectives.

1.2.3.1 Restoration of Tidal Marsh

Throughout the scoping process and afterward, tidal marsh restoration at Crissy Field was the greatest issue of public concern. Comments were expressed in support of and in opposition to including a tidal marsh in the design. Strong support for tidal marsh restoration was voiced, along with concerns that the tidal marsh be of adequate size to function naturally and provide ecological and educational values. Comments supportive of a tidal marsh also emphasized the importance of demonstrating the feasibility of and commitment to future expansion of the marsh south of the current planning area, and questioned the location and size of parking areas at the east end of the site.

Many concerns were also raised regarding compatibility of a tidal marsh with existing and proposed recreational uses. Some commenters strongly voiced concerns about the uncertainty of viability of a constructed tidal marsh, the potential to create unwanted conditions conducive to pests such as mosquitos, the cost of construction and maintenance, and future evolution of the tidal marsh. The space allocated for a tidal marsh was seen by some as detrimental to existing uses of the site and introducing the potential for conflicts between natural resource preservation and recreational uses, especially off-leash dog walking.

1.2.3.2 Plant and Wildlife Habitats

In addition to the tidal marsh issues, a number of other issues related to the natural environment were brought up during the scoping process. Most comments related to natural plant and wildlife habitats were in favor of keeping the natural elements in the site plan. Support for retaining and/or expanding the dunes was voiced, along with maintaining native vegetation and removing non-native grasses and trees. Concerns about the potential conflict between dogs and natural areas were also expressed. Commenters both in support of and against establishing the waterbird protection area voiced opinions.

1.2.3.3 Restoration of the Historic Airfield

Most comments relating to cultural resources focused on the issue of restoring the historic airfield. Most commenters were supportive of having an airfield component to the plan, but there were varying opinions about how that component should be implemented. Some wanted a new grass multipurpose airfield restored to historic dimensions, and others wanted the existing airstrip to be retained. Opinions about various lengths and accuracy to an important historic time period were voiced. Concerns about "intrusion" of the tidal marsh into the airfield area, and vice versa, were expressed. Supporters of restoring the airfield to its historic dimensions were concerned that creating a large tidal marsh in the central/east portion of the site were competing objectives.

1.2.3.4 Providing for Existing and Planned Recreational Uses

Use of Crissy Field for recreational activities was also of great public interest and concern. A huge amount of public support was expressed for maintaining access and facilities for existing activities at Crissy Field, including walking, running, bicycling, rollerblading, picnicking, bird watching, photography, and other activities. Proponents of maintaining these current recreational uses voiced support for incorporating features that support these activities, such as the Promenade, other pathways, beach and shoreline access, and parking, into the plan. Strong support for retaining off-leash dog walking was voiced, along with desires to reduce or eliminate dog

activities at Crissy Field. Commenters also expressed support for, and opposition to, accommodating boardsailing activities.

1.2.3.5 Transportation and Parking

During scoping, the issues of greatest concern related to transportation and parking were the amount of parking that should be supplied and the amount of traffic traveling through Crissy Field. The greatest number of comments emphasized reducing the amount of traffic and parking included in the site plan. Some people wanted a special event parking/staging area to be maintained. Commenters also suggested screening parking areas with vegetation. Others commented that all parking should be south of Mason Street. Concerns about parking overflowing into adjacent neighborhoods were voiced.

Other transportation issues related to concerns about access. Support for and opposition to retaining connections to the Palace of Fine Arts, Fort Point, Doyle Drive, and Fort Mason shuttle parking were expressed.

1.2.3.6 Built Environment

Overwhelmingly, commenters voiced support for removing buildings, the helipad, concrete, fences, pipes, rubble, etc., to enhance open space and views from Crissy Field. However, there was also support for providing a fenced dog-running area and retaining a facility to accommodate emergency helicopter landings.

1.2.4 Public Involvement and Scoping

Identification of the issues and concerns summarized above resulted from an extensive amount of public input. Although earlier planning efforts for a smaller portion of the site took place before base closure, public involvement for planning the entire Crissy Field area began in 1991 with the vision workshops held for the GMPA. It continued with the environmental scoping for the GMPA EIS and with the series of public workshops and meetings held to address site planning issues specifically for Crissy Field.

Public involvement for the current plan began with two public workshops held in 1995 to solicit input on developing the site plan and identifying environmental issues and alternatives. Approximately 150 people attended the initial public workshop in January 1995. Then in June 1995 approximately 130 people attended the public scoping workshop.

In addition to the larger general public meetings, more focused meetings were held with representatives of public agencies and special interest groups. Two interagency meetings were held in 1995 and 1996 to discuss environmental compliance and permit issues. Six agencies were represented, including the U.S. Environmental Protection Agency (EPA) Region 9, the U.S. Fish and Wildlife Service (USFWS), the U.S. Army Corps of Engineers (Corps), the Bay Conservation and Development Commission (BCDC), and the California Department of Health Services.

Several meetings were also held with each of the following agencies and groups: the San Francisco Recreation and Park Department, the California Coastal Conservancy, the Neighborhood Association for Presidio Planning, the Society for the Prevention of Cruelty to Animals (SPCA) and representatives of Crissy Field dog walkers, the San Francisco Boardsailing Association, People for the Presidio, and the GGNRA Advisory Commission Presidio Committee.

NPS also met with several environmental groups, including the Marin and Golden Gate Audubon Societies, Point Reyes Bird Observatory, Gulf of the Farallones National Marine Sanctuary, National Parks and Conservation Association, California Native Plant Society, Fort Point Environmentalists, Environmental Forum of Marin, Sierra Club Presidio Task Force, Save San Francisco Bay Association, Bay Area Wetlands Group, and People for a GGNRA.

Preservation groups involved in scoping included San Francisco Landmarks Preservation Board; the Fort Point and Presidio Historical Association; American Aviation Historical Society; the National Trust for Historic Preservation; and American Institute of Architects, San Francisco.

PURPOSE AND NEED FOR THE PROPOSED ACTION

Section 2.0
Alternatives, Including
the Proposed Action

2.1 Proposed Action

2.1.1 Introduction

The Proposed Action (Proposal) (Figure 2-1) for Crissy Field envisions sweeping environmental changes from the prevailing conditions of deteriorated surfaces, fenced-off areas, and rubble-lined sections of beach. It incorporates revitalized ecological communities, such as sand dunes and a tidal marsh, which once characterized the northern Presidio shoreline and weaves them into an areawide treatment that complements the nationally significant cultural values of the historic airfield and the popular recreational values of the shoreside open space. The Proposal creates a visual link between the Presidio and the bay by creating a natural transition of open space (Figure 2-2). It expands the scope and richness of public use through the vast, 100-acre site, integrating and amplifying the significant cultural, scenic, and natural influences that have all served to shape the site over time.

The site plan Proposal consists of implementing site improvements and changes to the landscape on the portion of Crissy Field north of Mason Street consistent with the concepts and actions described in the GMPA for the Crissy Field planning area. Approximately 100 acres, generally the area north of Mason Street, would be improved under this Proposed Action. The Proposal and the Dune Alternative are distinguished from each other by the treatment of the central portion of the site. The Proposal includes a 20-acre tidal marsh. The Dune Alternative includes a 20-acre gently rolling landscape with dune scrub vegetation in the central portion of the site and no tidal marsh.

This EA evaluates the effects associated with the Proposed Action, the Dune Alternative, and the No-Action Alternative. The sections below describe the common features of the two site plan alternatives (the Proposed Action and the Dune Alternative), followed by the unique features associated with the individual alternatives. The No-Action Alternative is also described.

2.1.2 Elements Common to Both Site Plan Alternatives

Many elements are common to both site plan alternatives. These common elements involve the following features:

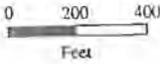
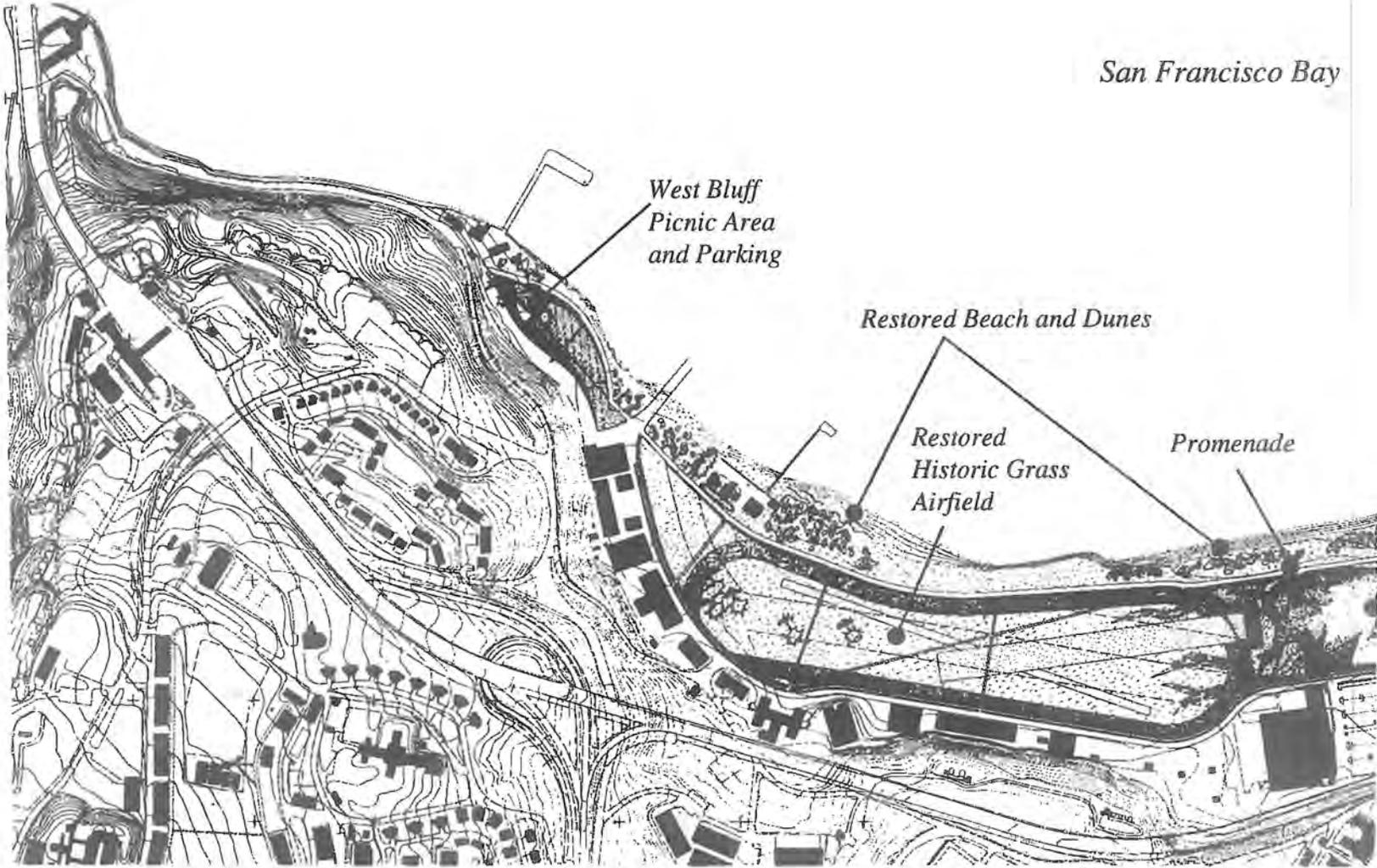
- Promenade improvements and realignment;
- Mason Street modifications;
- coastal dune restoration;
- East Beach and entry improvements;
- airfield restoration;
- West Bluff improvements (passive recreation area and parking);
- rubble removal, shore protection, and beach reconfiguration;
- retention and removal of existing vegetation;
- official designation of the waterbird protection area; and
- establishment of allowable off-leash dog use areas.

Table 2-1 summarizes the main components of each alternative. Each of the common components is discussed separately below.

2.1.2.1 Golden Gate Promenade Improvements and Realignment

The existing Promenade varies in width from 6 feet to 30 feet and is surfaced with a combination of crushed stone, asphalt, and asphalt gravel (Figure 2-1). Portions of the existing pathway surface are in poor condition. The Promenade would be resurfaced to create an enhanced pedestrian route.

San Francisco Bay



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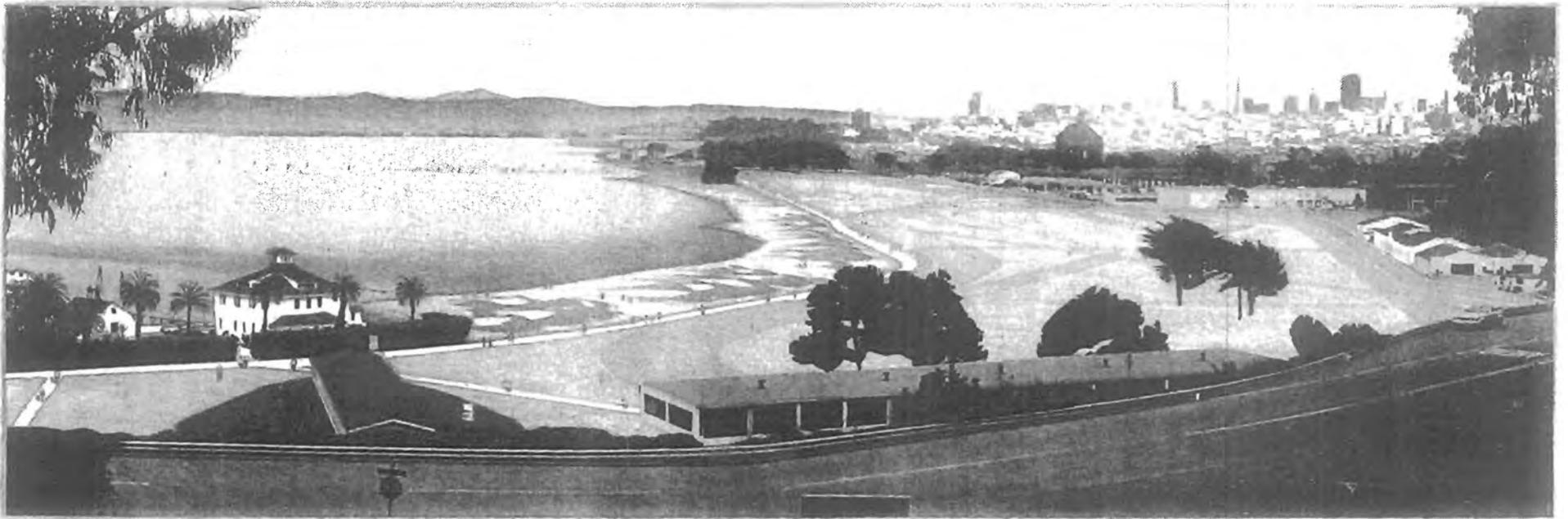


Figure 2-2
Proposal Overview from Lincoln Boulevard Overlook

Table 2-1. Summary Comparison of Major Elements of the Site Plan Alternatives

Element	Site Plan Alternatives		
	Proposed Action	Dune Alternative	No-Action Alternative
Golden Gate Promenade improvements and realignment	Yes; a bridge would be constructed on the Promenade to cross the tidal marsh channel to the bay	Yes	Existing Promenade alignment would remain
Mason Street redesign	Yes	Yes	No
Coastal dune restoration	Yes; existing dune restoration areas would be expanded to approximately 8 acres north of the Promenade	Yes; existing dune restoration areas would be expanded to approximately 8 acres north of the Promenade	No new dune restoration work would occur
Central dune field construction	No	A 20-acre stabilized dune field vegetated in dune scrub would be created in the central portion of the site	No
East Beach and entry improvements			
East entry	Yes; a 2-acre entry grove of Monterey cypress would be planted inside the east entrance. Stabilized dune landforms would screen parking from Mason Street and Little Marina Green	Yes; a 2-acre entry grove of Monterey cypress would be planted inside the east entrance. Stabilized dune landforms would screen parking from Mason Street and Little Marina Green	No
Boardsailing access	Improved and expanded facilities; beach extended by rubble removal	Improved and expanded facilities; beach extended by rubble removal	Unchanged from current conditions
Parking	Approximately 120 paved oversized spaces would be accommodated in the boardsailing area; additional parking on grass would accommodate approximately 280 spaces; 100 spaces would be provided south of Mason Street	Approximately 120 spaces would be accommodated in the boardsailing area; additional parking on grass would accommodate approximately 280 spaces; 100 spaces would be provided south of Mason Street	Unchanged from current conditions (space for approximately 560 vehicles located in the boardsailing area and associated with structures on the northeast corner of the site)

Table 2-1. Continued

Element	Site Plan Alternatives		
	Proposed Action	Dune Alternative	No-Action Alternative
Airfield restoration	Yes; the grassy surfaced airfield would be restored on 28 acres	Yes; the grassy surfaced airfield would be restored on 28 acres	No
West Bluff improvements			
Passive recreation area	Yes; approximately 2.5 acres would be developed for picnicking and small gatherings	Yes; approximately 2.5 acres would be developed for picnicking and small gatherings	No
Parking	Approximately 160 spaces would be created at the west end of the plan area	Approximately 160 spaces would be created at the west end of the plan area	Unchanged from current conditions (approximately 25 spaces located near Torpedo Wharf)
Rubble removal and beach reconfiguration	Yes; rubble along 800 feet of the shoreline would be removed or graded	Yes; rubble along 800 feet of the shoreline would be removed or graded	No
Retention and removal of existing vegetation	Most of the existing non-native vegetation would be removed, except for Monterey pine and cypress, the row of eucalyptus along Lyon Street, and the vegetation along the edge of the U.S. Coast Guard compound	Most of the existing non-native vegetation would be removed, except for Monterey pine and cypress, the row of eucalyptus along Lyon Street, and the vegetation along the edge of the U.S. Coast Guard compound	Existing vegetation would remain
Waterbird protection area	Yes; 1,600 feet of shoreline and adjacent waters	Yes; 1,600 feet of shoreline and adjacent waters	No
Tidal marsh construction	A 20-acre tidal marsh would be constructed in the central portion of the site	No wetland construction would occur; however, some partial excavation would occur in the central dune field construction area to allow for the option to construct wetlands as part of a future project	No
Total area	100 acres	100 acres	100 acres

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Seating areas and overlooks would also be added as amenities associated with the Promenade (Figures 2-3 and 2-4). A uniform width of 20 feet would be provided to allow ample room for walkers, runners, and slower-moving bicyclists. Crushed oyster shell or stabilized aggregate would be used as a standard surfacing material to provide adequate, uniform surfacing for users while discouraging use by high-speed bicyclists. The surface would meet minimum standards of the Americans with Disabilities Act (ADA).

At the eastern end of Crissy Field, the Promenade would be shifted slightly southward to accommodate dune restoration, rubble removal, and beach reconfiguration and to relieve problems of storm wave damage and wind-blown sand. It would also shift southward at the West Bluff area.

2.1.2.2 Mason Street Modifications

Mason Street generally forms the southern boundary of the site. Mason Street currently averages 51 feet in width, consisting of two 20-foot-wide travel lanes and an 11-foot shoulder. The proposed changes in Mason Street are to slow automobile traffic, to improve recreational uses and safety, and to restore cultural resources to accommodate the historical shape of the airfield.

Under both site plan alternatives, Mason Street would be restriped so that the travel lanes would be narrowed in width to a standard 12 feet each. Along the north side of the roadway, a 5-foot-wide median and a 10-foot-wide separated bikeway and separate pedestrian path would be created. The median would be provided to ensure physical separation between vehicular travel lanes and bicycle traffic on the bikeway. The bikeway is expected to draw high-speed bicycle traffic away from the pedestrian-oriented Promenade. A second 5-foot-wide median strip would be constructed to physically separate the bikeway from the 8-foot-wide pedestrian path that would be created along the north side of the roadway (Figure 2-5).

Both of the alternatives include minor alterations to the alignment of Mason Street. The street would be shifted slightly at its west end to restore the configuration of the historic airfield. New curves in the alignment are also intended to reduce traffic speeds through the area. Mason Street would be extended from Crissy Field Avenue along the front of historic airfield hangars to the West Bluff parking lot. This alignment represents a

restoration of the historical road corridor for Mason Street, which has been cut off for some time.

2.1.2.3 Coastal Dune Restoration

Existing coastal dunes (referred to as northern foredune in Holland [1986]) along the north side of portions of the Promenade would be expanded and protected along approximately 1,400 linear feet of the shore. Pedestrian access would be provided on defined paths and post-and-cable fencing would provide protection. No permanent irrigation or soil amendments would be used for the restored dunes; however, irrigation may be necessary during the plant establishment phase. Native vegetation approved by NPS will be planted on the restored dunes. Common northern foredune species include beach primrose (*Camissonia cheiranthifolia*), coastal sand verbenas (*Abronia latifolia* and *Abronia umbellata*), beach bur (*Ambrosia chamissonis*), American dune grass (*Leymus mollis*), and California poppy (*Eschscholzia californica*). A species list is provided in Appendix A. Restoration of dunes would include community participation through volunteer restoration work.

2.1.2.4 East Beach and Entry Improvements

The East Beach currently consists of a grid of asphalt streets and parking in various degrees of disrepair interspersed with unpaved grassy areas. This area would be enhanced for use by visitors for picnicking, parking, and staging recreational equipment (Figures 2-6 and 2-7). All existing streets would be removed, along with most of the existing pavement in this area. Two new entry travelways would be paved, as well as two travelways parallel to the Promenade (Figure 2-8). One row of parking would be paved closest to the Promenade, providing parking spaces for roughly 120 automobiles to meet normal daily parking needs. All other parking would be on turf south of the paved parking. This grass would allow for flexibility of use, allowing for automobile parking as well as providing a soft surface for boardsailor setup, picnicking, or other recreational activities. The grass surface would also minimize the visual effect of providing for parking in this area when parking demand is low. The turf area would provide overflow capacity for up to 280 cars. The total area for parking and rigging that would be provided would be roughly equivalent to the area presently used for these activities.

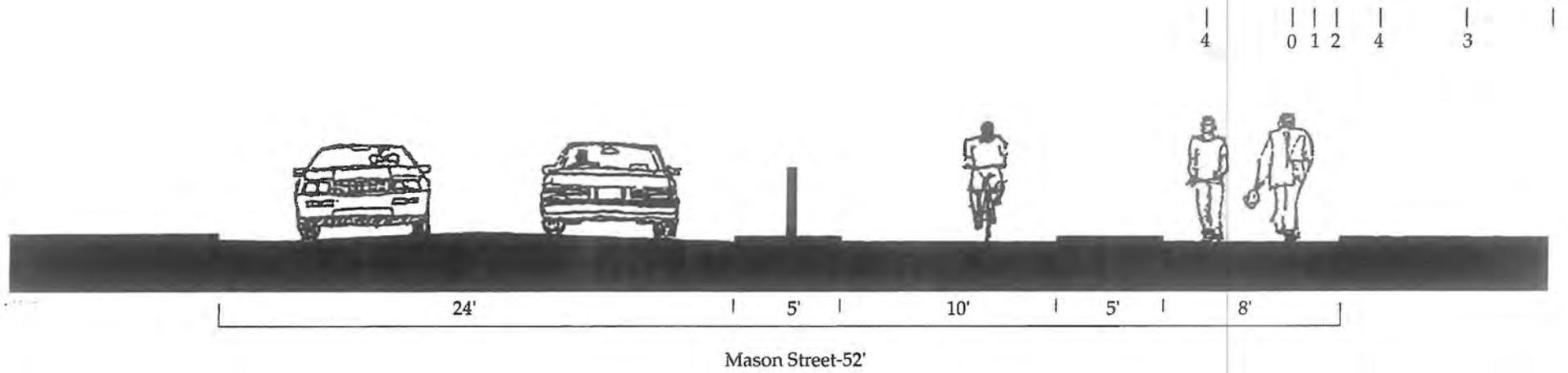


Figure 2-3
Improved Views, Marsh Overlooks, and Shoreline Promenade



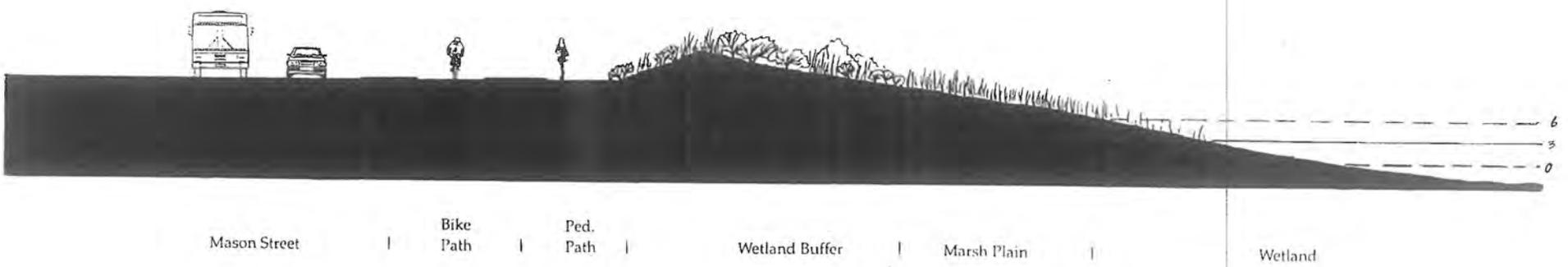
New Seating Areas along the Promenade and Barrier Fencing Hidden in Vegetation

Figure 2-4



Mason Street-52'

CROSS SECTION OF MASON STREET, BICYCLE PATH, AND PEDESTRIAN PATH



SECTION THROUGH MASON STREET AT WETLAND

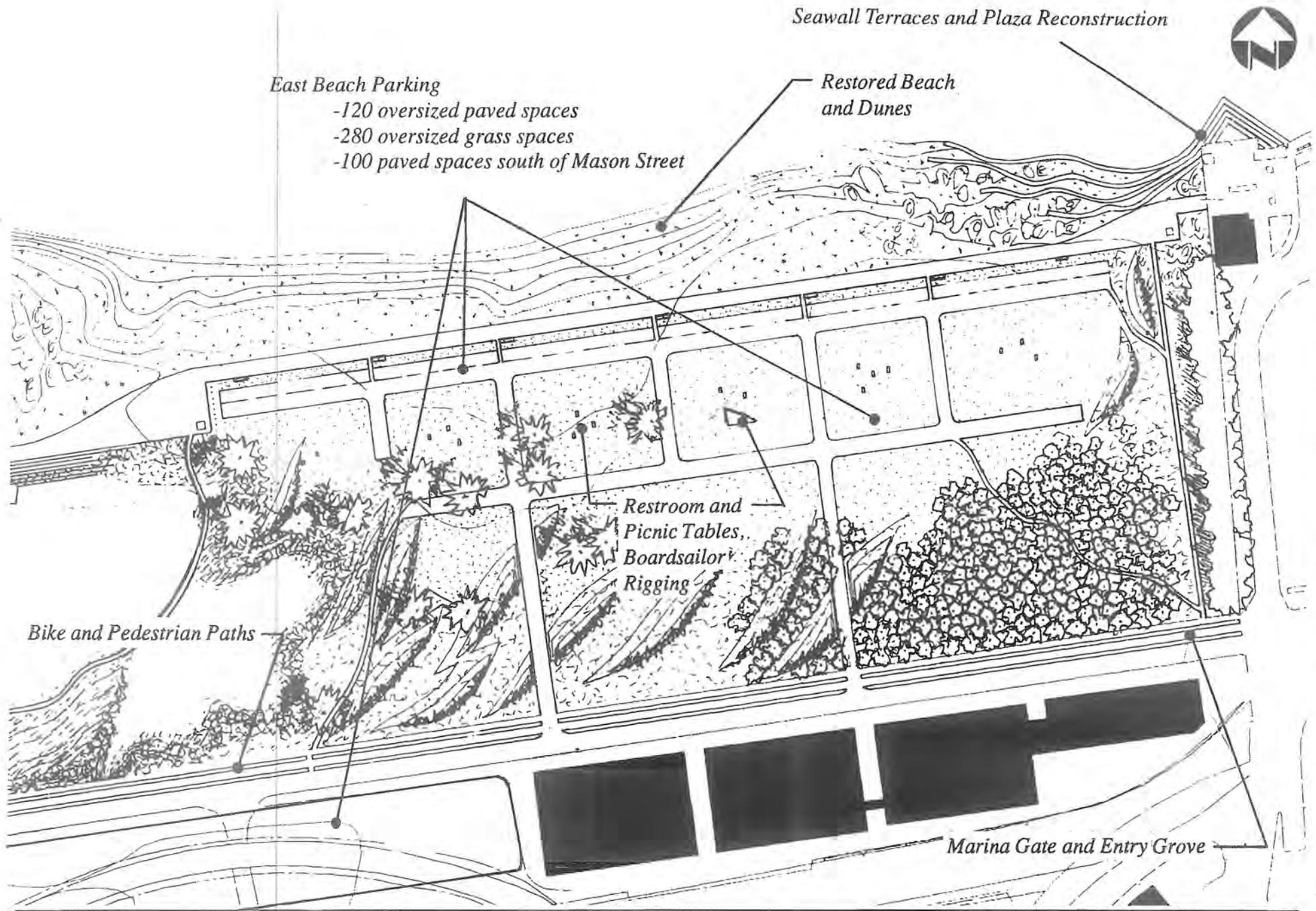


Figure 2-6
East Beach Improvements

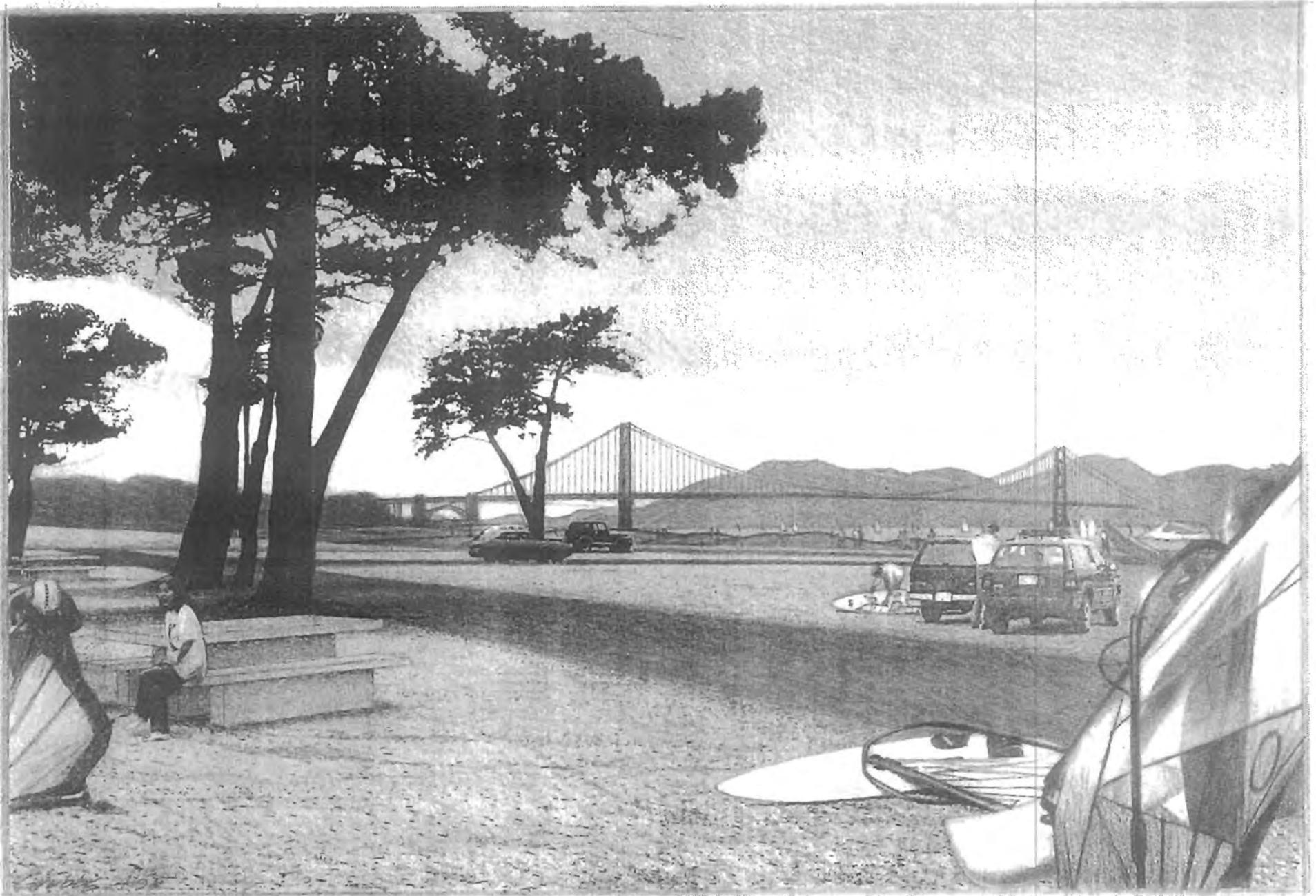


Figure 2-7
Improved Parking and Boarding Areas

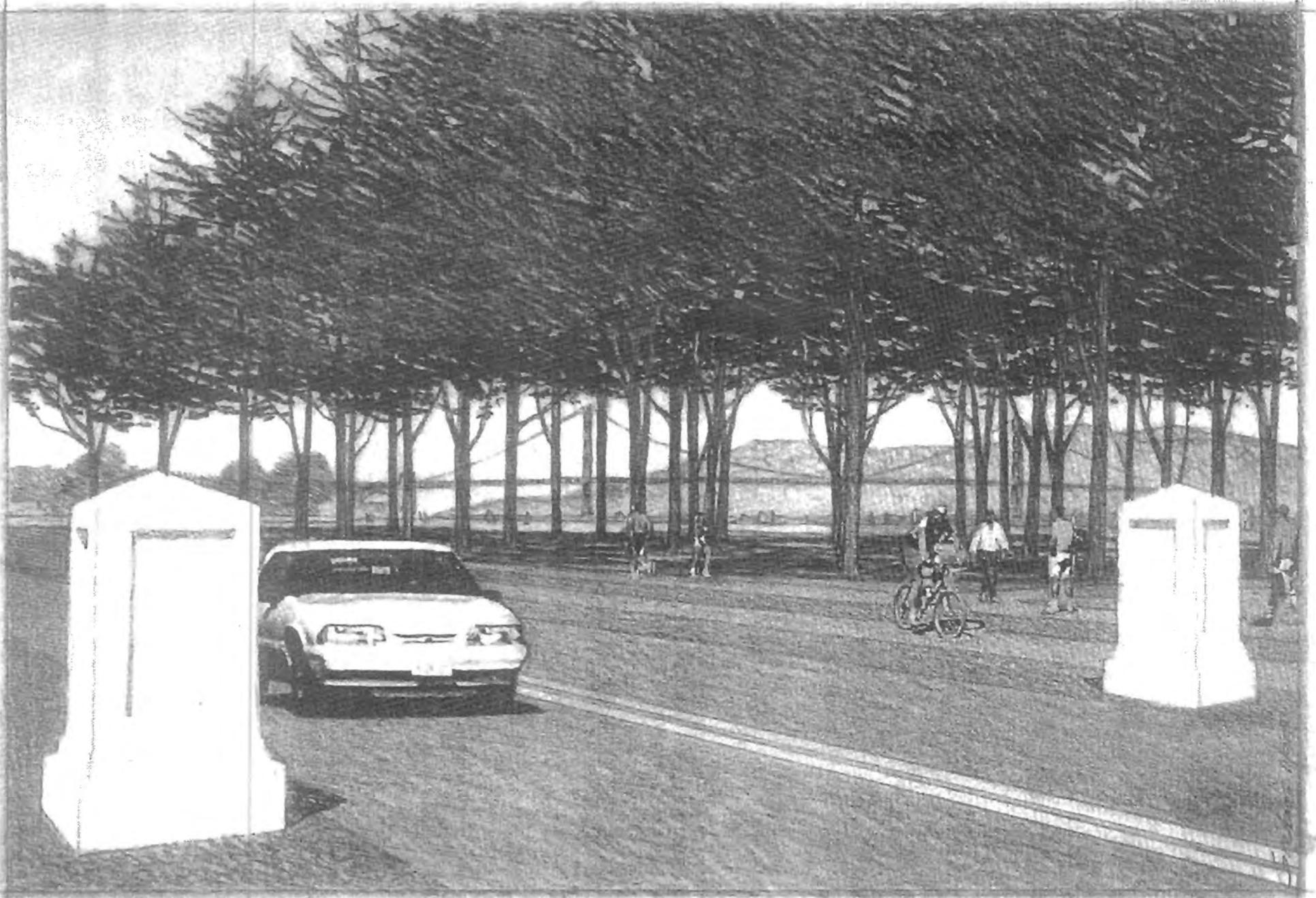


Figure 2-8
Entrance at Old N 1 Street

The grass would be irrigated and mowed for sailboard rigging and a variety of active recreational uses and to enhance the contrast with surrounding dune vegetation not suitable for parking. Picnic tables would be provided throughout the area. A restroom complex with outdoor showers would be constructed near the center of the East Beach site.

A vegetated median with a number of paths connecting parking areas with the beach would be located between the parking areas and the Promenade to provide a visual buffer, seating, and an area for boardsailor setup. This buffer would also control cross traffic and minimize conflicts between users of this area. The existing Monterey pines and cypresses would remain interspersed in the parking area to provide protection from the wind and increase scenic quality.

Open space between Mason Street and East Beach parking would be recontoured to create several low dune landforms vegetated with dune scrub, creating stable separation and screening parking from views along Mason Street. A list of some of the plants that would be likely used in this area is given in Appendix A. This is designed to be a low-maintenance area with irrigation only for the plant establishment phase.

Landscape improvements at the east entry also include a grove of trees covering roughly 2 acres at the easternmost end of Crissy Field planted in Monterey cypress to create a sense of entry reminiscent of other Presidio gates. The trees, other vegetation, and low dunes in this area would improve the visual quality by screening views of cars parked at the East Beach parking area. Their location would also improve wind protection for Little Marina Green.

2.1.2.5 Airfield Restoration

The historic grass airfield would be restored and would extend from the Promenade south to Mason Street and from the commissary west to the historic hangar buildings and seaplane ramp (Figures 2-9 and 2-10). The grass surface, configuration, and dimensions of the airfield would be restored to their appearance during the most significant historic period of the 1920s. The character, look, and feel of this historic period would be recreated.

The airfield would be designed for small to medium-sized festivals and events and active daily outdoor recreational use, including off-leash dog walking. Pedestrian paths, surfaced with crushed oyster shell or stabilized aggregate, would be constructed to provide access between the Promenade and Mason Street. Power and lighting to support events would be incorporated into the surface. Fences, pavement, and obstructions would be removed and the material excavated from the central portion of the project site would be used to raise the elevation of the airfield slightly. The airfield surface would be vegetated with red molate fescue grass, a variety that poses a low potential for invasiveness to adjacent dune areas. This grass, native to the Bay Area, can tolerate drought, mowing, and active recreation. Monterey pine and cypress trees at the west end of the airfield would be retained. The remainder of the trees would be removed. A permanent irrigation system would be installed below grade that will be used for initial establishment, during drought conditions, and after periods of heavy pedestrian use. Although the elevation of this area would be raised, the airfield would be at grade with Mason Street all along its south and west edges. A maximum 3-foot elevation difference would define the north and east edges of the airfield (Figure 2-11).

The restoration would include the removal of approximately 15 acres of asphalt paving and thousands of yards of chain-link fencing that segment the project area. The concrete pad, lights, and fencing associated with the helipad would also be removed. The airfield would continue to accommodate emergency helicopter landings related to the emergency operations of the park and disaster response.

The airfield restoration incorporates interpretations of historic patterns of use, including the trace of the 1915 Exposition racetrack and early airfield use. The illustrated concept for the treatment of the airfield should be considered to reflect general examples of site restoration. Actual restoration details may differ and will be guided by the time period of the airbase's national influence. Both educational and festival uses may be facilitated by the incorporation of former historic site elements into the designs.

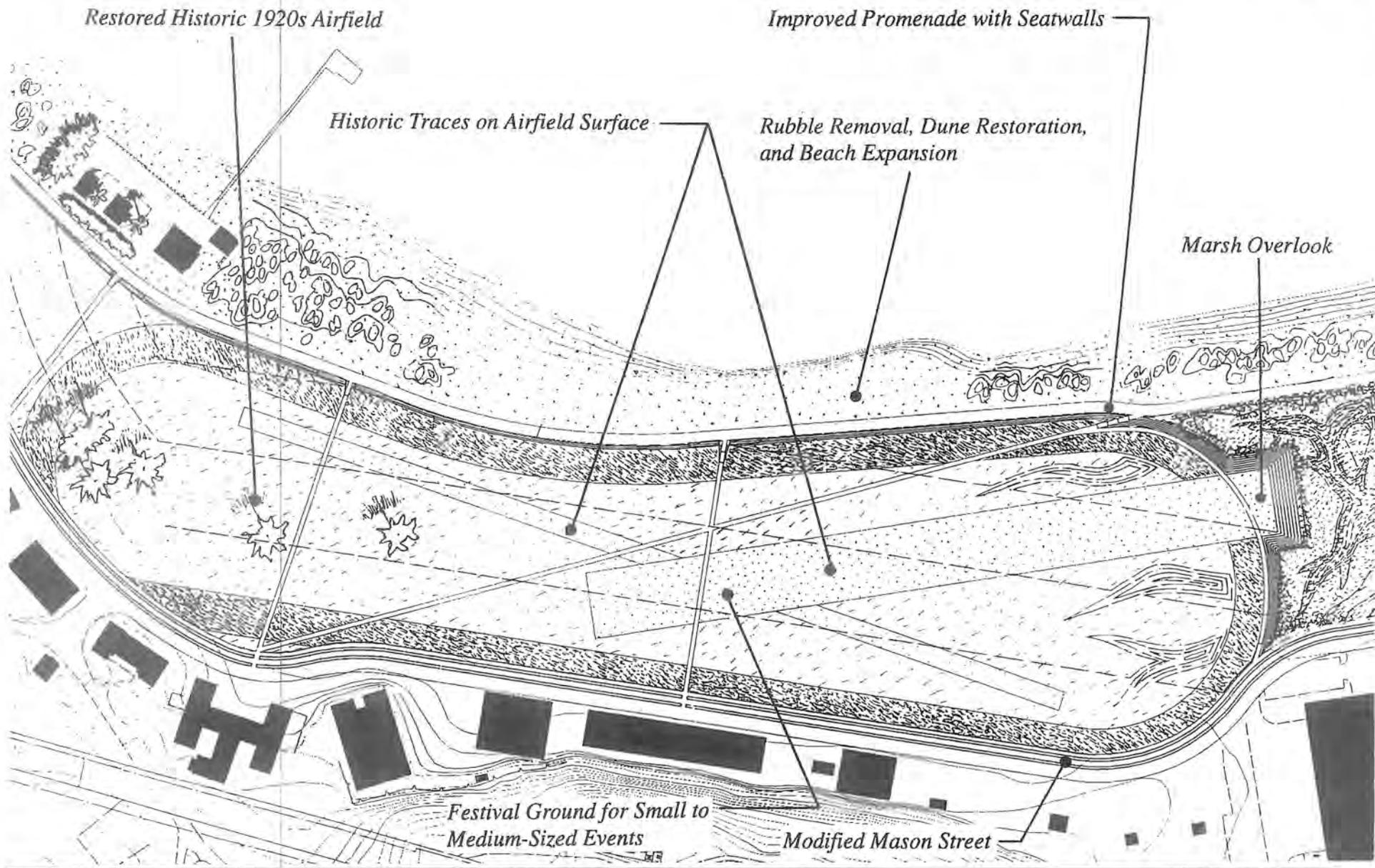


Figure 2-9
Airfield Restoration

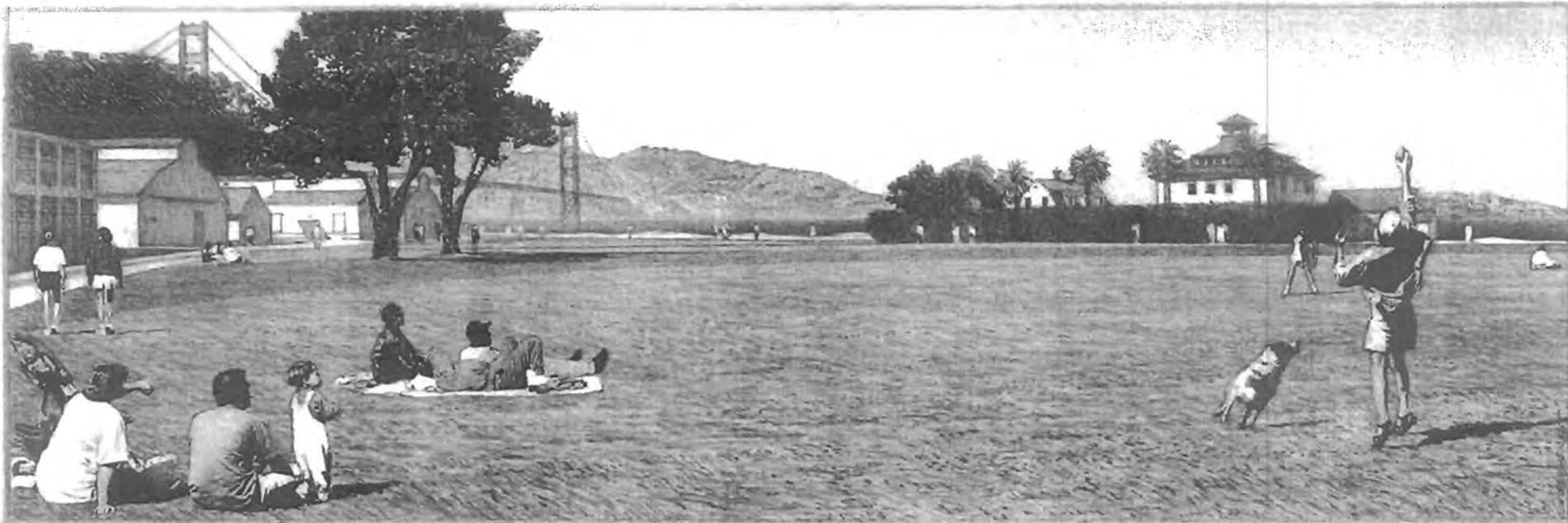
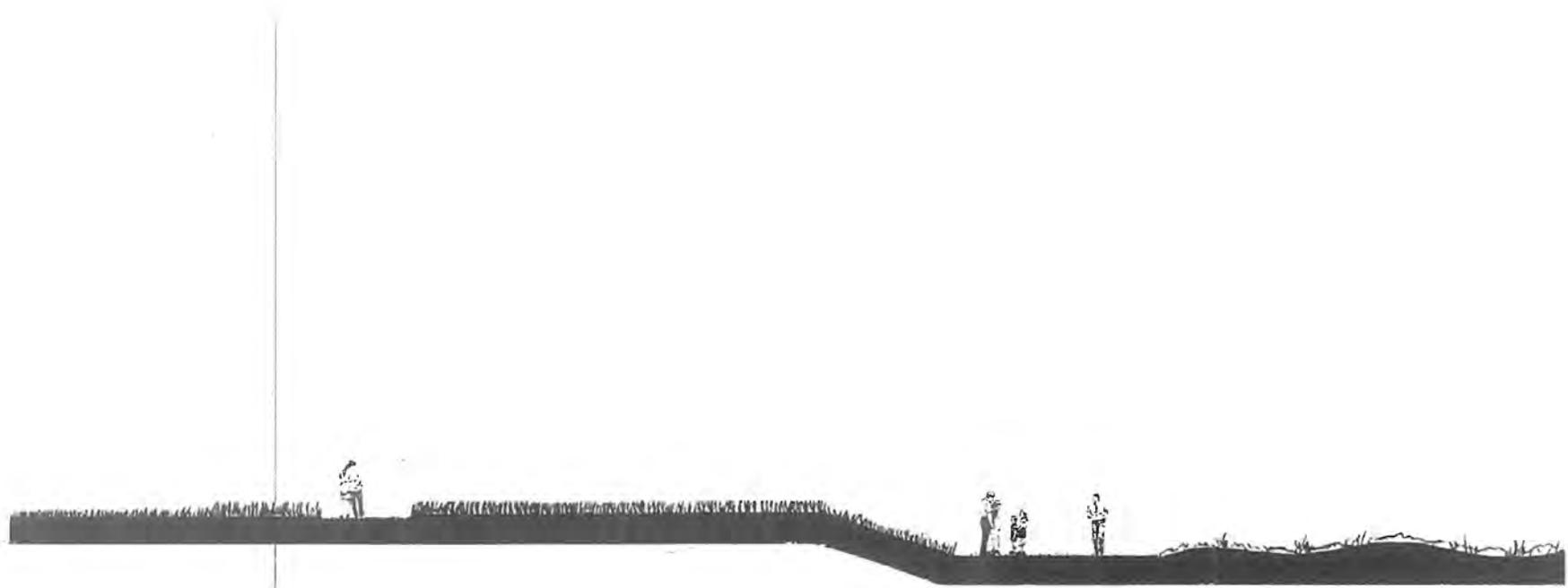


Figure 2-10
Restored Crissy Airfield



Airfield

| Promenade |

Dunes

CRISSY FIELD

SECTION THROUGH PROMENADE AT AIRFIELD

| 10' | 0 | 5' | 10' | 30'

Figure 2-11
Airfield Cross Section

2.1.2.6 West Bluff Improvements

The West Bluff is at the wind-sheltered base of the steep bluffs at the west end of the plan area. A 2.5-acre portion of this area would be enhanced for use for picnics, small gatherings, and events (Figure 2-12). Soil and rubble from excavations elsewhere in the plan area would be used to create minor topographic features oriented to views of the bay and bridge and provide screening and separation from the parking area. The surface would be irrigated turf, and picnic tables and related visitor amenities would be provided (Figure 2-13).

2.1.2.7 Rubble Removal, Shore Protection, and Beach Reconfiguration

The existing shore edge at Crissy Field contains exposed concrete, asphalt, and brick rubble that has been used for fill material and to extend and protect the shoreline. The exposed rubble is configured with a nearly vertical slope, creating a defined boundary between the sand beach and the rest of the project area. Where possible, rubble would be removed to restore a natural beach profile and allow windblown sand to sustain an active dune ecosystem. Rubble would be retained in several locations where needed to continue to provide shoreline protection. At the eastern project boundary connection with the City of San Francisco's abandoned pump station, terraced shore protection would replace rubble, providing a transition to the sandy beach (Figures 2-14 and 2-15).

In all other areas, exposed rubble would be removed and the beach graded to a gentle slope. Through extraction of this rubble, the beach would be lowered to a natural beach profile to allow blowing sand to accumulate. This accumulation of sand would expand the beach area and allow increased sand exchange with the established dunes.

2.1.2.8 Retention and Removal of Existing Vegetation

A small number of introduced shrubs and trees exist at Crissy Field. Typical species include eucalyptus, palm trees, Monterey pine, and cypress. Some of these plants would be removed and others would be retained. Palm trees located along the existing asphalt airstrip would be removed and replanted

elsewhere. Various palms and shrubs in the East Beach parking area and shrubs near the World War II-era barracks would be removed. Eucalyptus trees near the west end of the site would be removed. The row of eucalyptus trees along Lyon Street would be retained as a boundary between Crissy Field and Marina Green. Monterey pine and cypress scattered on the site would be retained. Existing vegetation that defines the U.S. Coast Guard compound would also be retained.

2.1.2.9 Waterbird Protection Area

Under either alternative, a waterbird protection area would be officially established as called for in the GMPA (Figure 2-1). The area for protection would be designated and clearly marked with signage for waters between the pier at Torpedo Wharf (Fort Point) and 500 feet east of the former U.S. Coast Guard station. Watercraft would not be permitted to launch from the shore along the protected area. Dogs would also be excluded from the beach in this area.

2.1.2.10 Dog Use Areas

Dog walking is a popular activity at Crissy Field, and both alternatives provide for the continued enjoyment of that activity. An approximately 70-acre area would be available for dog activities. Walking dogs off leash under voice control would be permitted on the Promenade and beach east of the U.S. Coast Guard station, on the restored airfield, and in the East Beach area. Dogs would not be permitted, even on leash, on the overlooks on the boardwalk crossing the tidal marsh or in portions of the dune field that would be enclosed by barrier fencing hidden by vegetation.

2.1.2.11 Implementation

Although it is desirable to implement all of the Crissy Field plan at once, it might become necessary, because of funding limitations, schedule of the Army-funded environmental remediation, or other delays, to phase implementation. It may also become important to complete portions of the project more quickly to take advantage of special funding and other

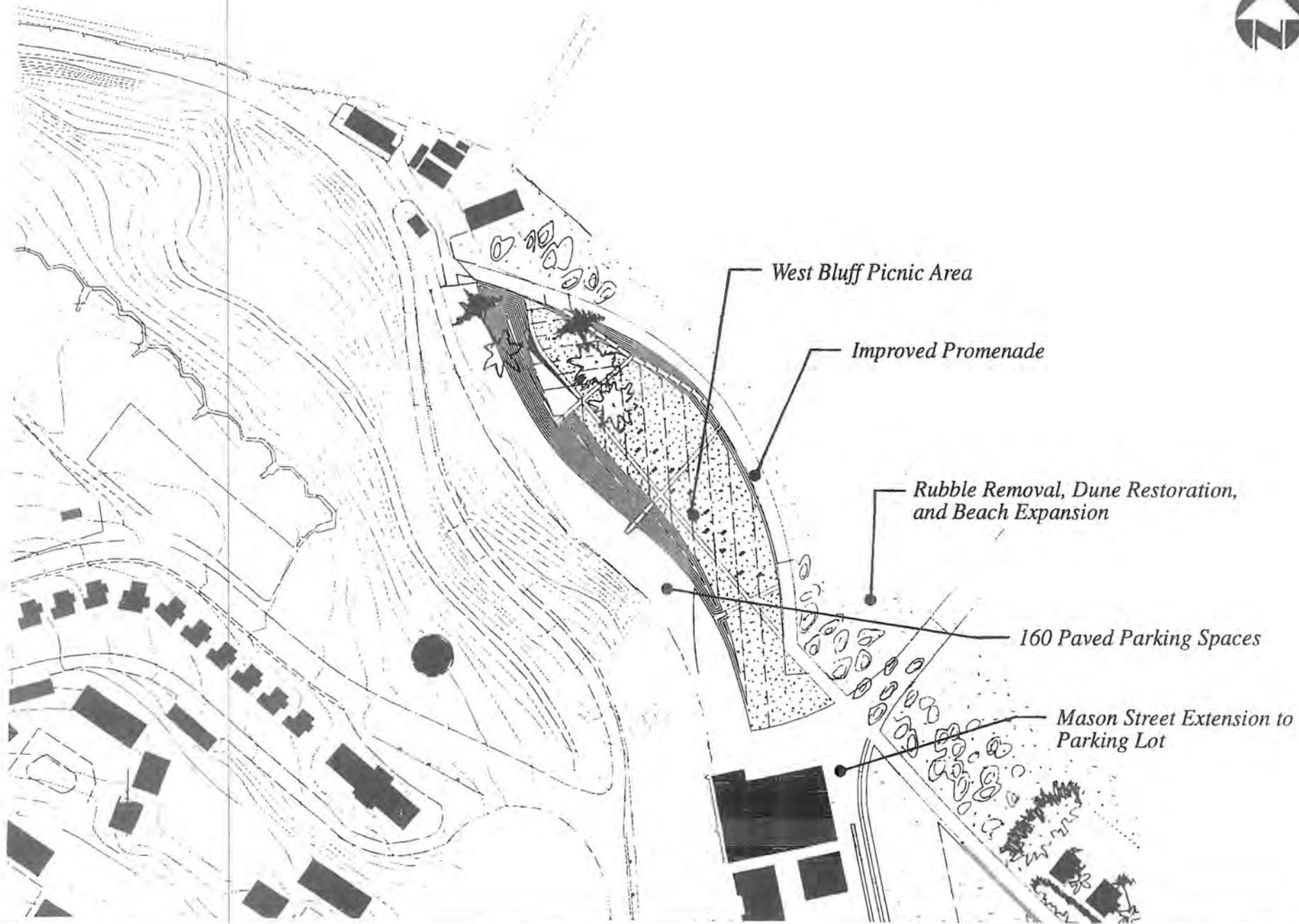


Figure 2-12
West Bluff Improvements



Figure 2-13
West Bluff Group Picnic Area

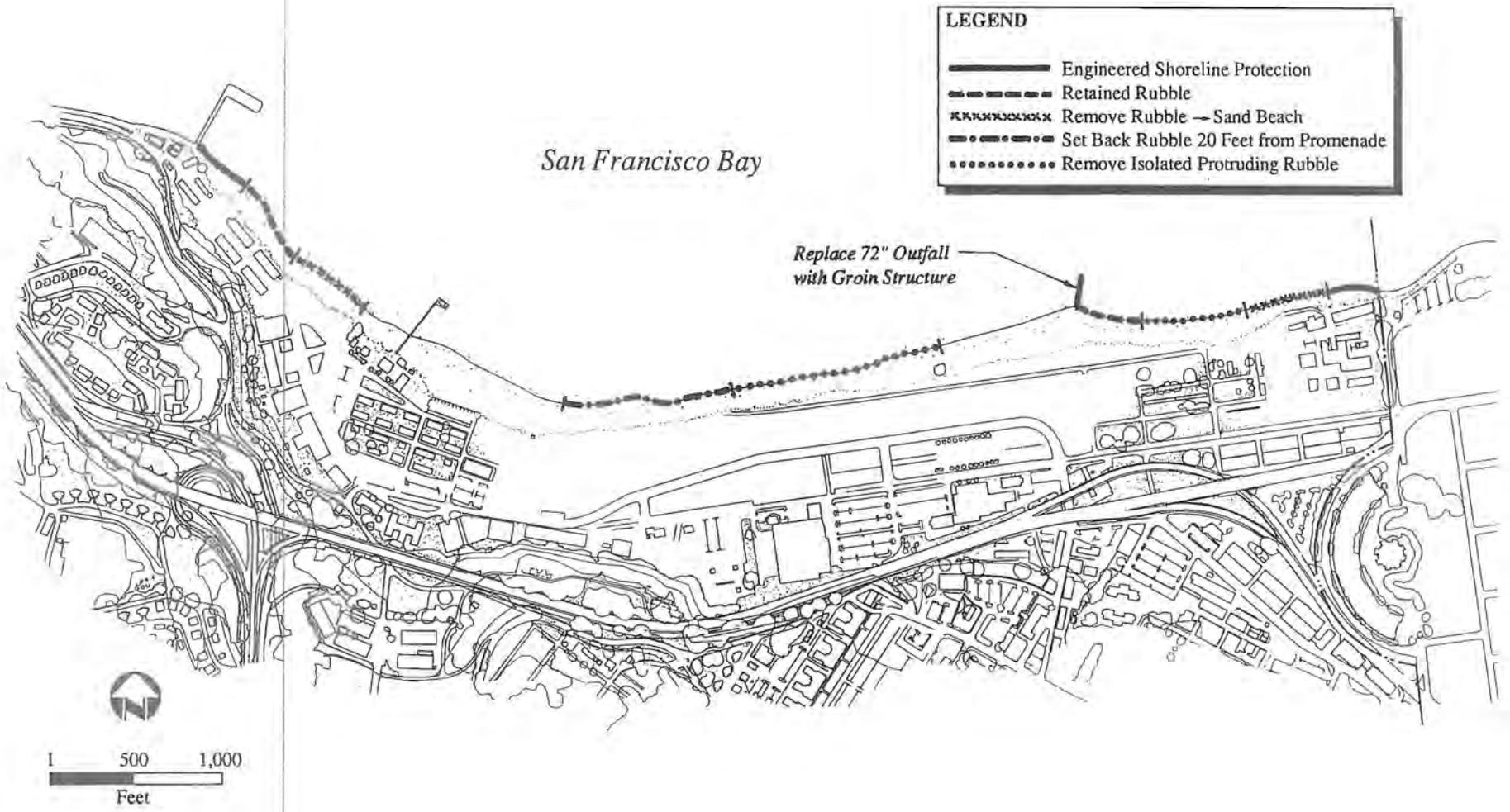


Figure 2-14
Rubble Removal, Shore Protection, and Beach Restoration

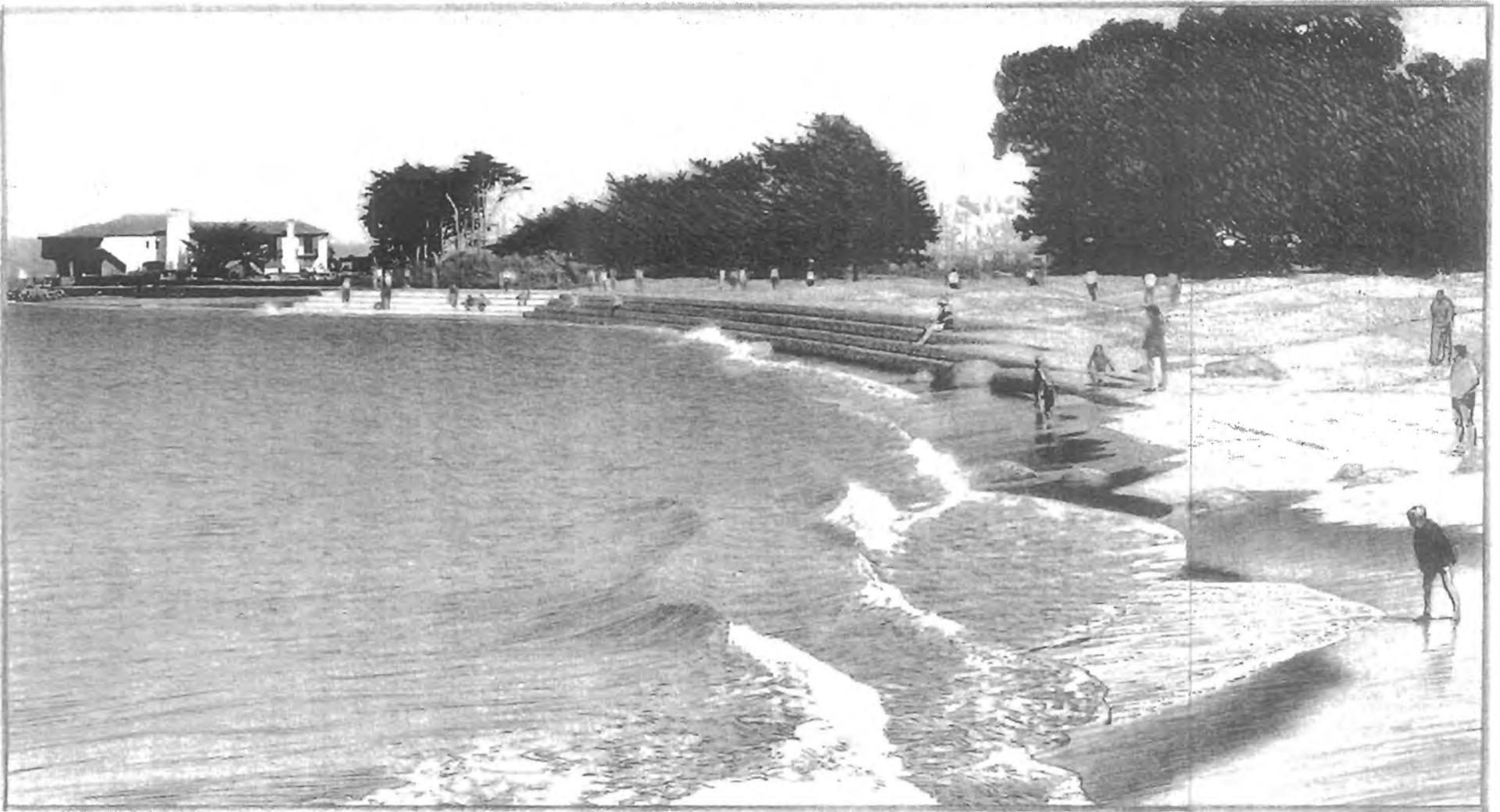


Figure 2-15
Entry Plaza Shore Protection and Expanded Beach
Created by Rubble Removal at Eastern Entrance

ALTERNATIVES, INCLUDING THE PROPOSEDACTION

opportunities. This phasing will not be implemented in such a way that it forecloses future implementation of the remaining portions of the project or other features outlined in the GMPA. It is anticipated that the final design and funding acquisition activities would take 2 years, and construction could begin no earlier than summer 1999.

2.2 Project Alternatives

In addition to the above elements, the two site plan alternatives each have elements that are unique. The following sections describe the specific elements of the Proposal and the Dune Alternative, as well as the No-Action Alternative. The primary difference between the two site plan alternatives is the treatment of the central portion of the project area extending from the edge of the historic airfield to the East Beach area.

2.2.1 The Proposal

In addition to the features described above in Section 2.1 (Figure 2-1), the Proposal includes a 20-acre tidal marsh to be created near the center of the site plan area (Figure 2-16), restoring a remnant of the natural tidal marsh that historically existed on the northern waterfront. This habitat type is commonly referred to as northern coastal salt marsh (Holland 1986).

The marsh would be created by excavation of soil from the central portion of the site, which would be used for airfield restoration and to create other topographic features. The restoration approach is to provide a template that allows for the natural processes of scouring and sedimentation that will encourage the evolution of the marsh ecosystem. The marsh would be created in an immature state and would evolve to maturity with minimal intervention. This means that initially much of the marsh would be open water and intertidal sand and mud flats surrounded by a perimeter of marsh vegetation. The vegetation, primarily pickleweed (*Salicornia* sp.), would later expand to cover a large portion of the site. An open-water lagoon would connect to the bay via a channel across the beach.

Development of the tidal marsh would emphasize provision of ecological values, balanced with educational, aesthetic, and historical values. Except where the features and structures described below are located, the entire tidal marsh would have a vegetated buffer zone ranging from 30-50 feet in width along the north side to 50-200 feet in width along the south, east, and west shoreline. This buffer would consist of dune scrub species such as coyote brush (*Baccharis pilularis*), mock heather (*Ericameria ericoides*), salmon monkeyflower (*Mimulus aurantiacus*), yellow bush lupine (*Lupinus*

arboreus), and seaside woolly sunflower (*Eriophyllum staechadifolium*) to create a dense buffer between humans and wildlife, as well as provide upland habitat associated with the tidal marsh. Barrier fencing set within the vegetation would deter dogs, cats, and visitors from getting into the marsh and disturbing wildlife (Figures 2-4 and 2-18). Three islands would provide a refuge for birds.

A bridge would be constructed across the channel to maintain a continuous pathway for the Promenade. Perimeter access to the tidal marsh would be provided from the Promenade and from the Mason Street corridor. The northern edge of the tidal marsh would be configured similar to the stabilized dunes proposed under the Dune Alternative.

Three overlooks along the Promenade meeting ADA access requirements would provide perimeter access for pedestrians to stop and view the marsh from the north edge. The westernmost overlook is designed to allow interpretation of the marsh plain and is detailed like a large blind, so that visitors can observe wildlife. The other pair of overlooks would be at the east end of the tidal marsh, near the north terminus of the boardwalk. The eastern one would be a ramp descending from the Promenade into the water, providing access at all points in the tidal cycle. Terraced steps along the Promenade would provide space for groups to gather for education programs. Vegetation between these steps and the water's edge would provide some buffer between wildlife and visitors. The two eastern overlooks would be separated from the Promenade by fencing, barrier walls, and a self-closing gate to increase public safety and to ensure that off-leash dogs do not have access to these areas.

The tidal marsh would also have one overlook located at the east end of the airfield (west end of the marsh) (Figure 2-17). This overlook would be buffered by vegetation and barrier fencing so that wildlife would not be disturbed.

A boardwalk would cross the marsh, connecting Halleck Street (future site of the shuttle stop and primary pedestrian connection to the Main Post) with the Promenade and East Beach parking (Figure 2-18). The boardwalk is

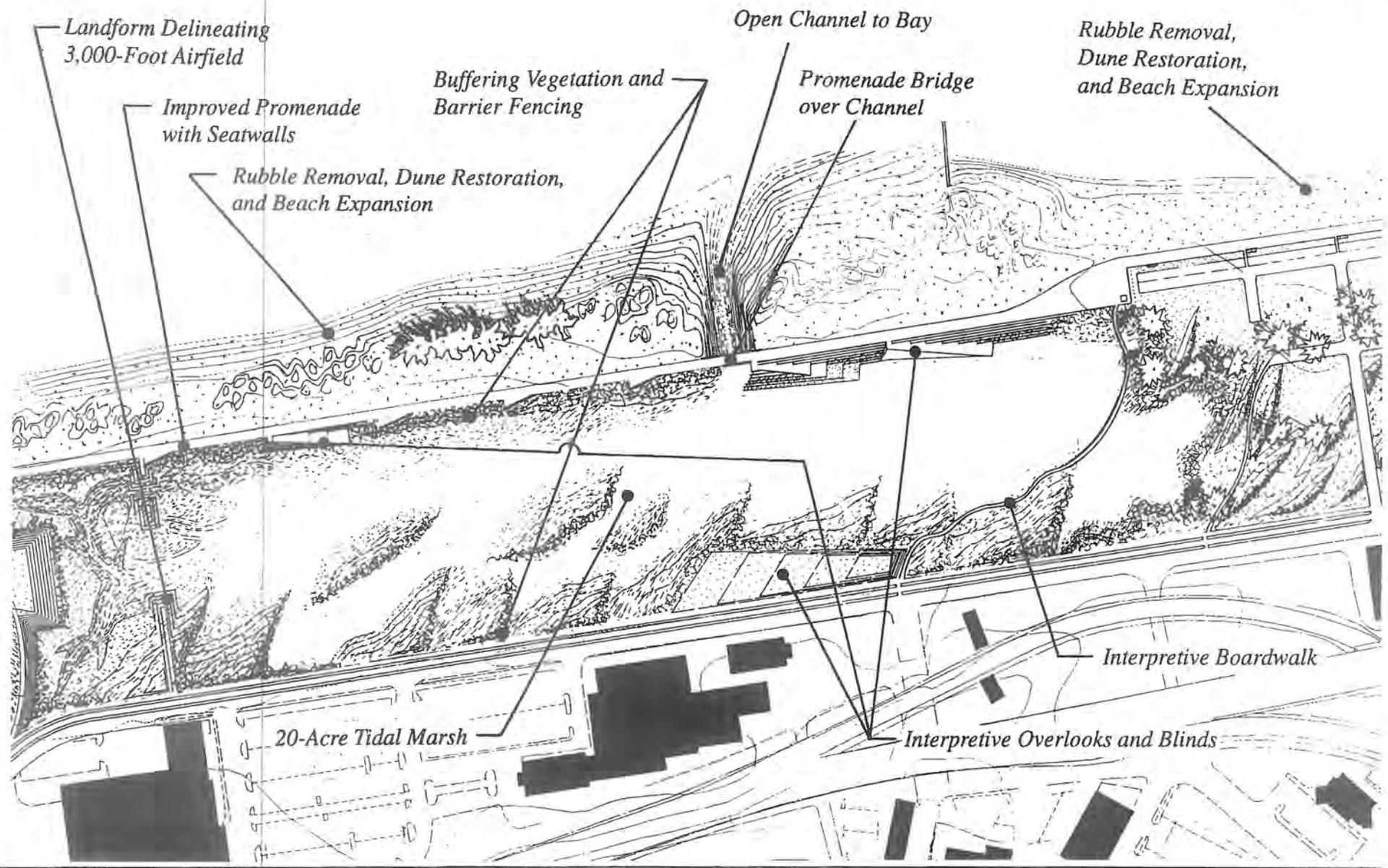


Figure 2-16
Tidal Marsh



Figure 2-17
View of the Marsh and San Francisco Skyline
from the East End of the Historic Airfield

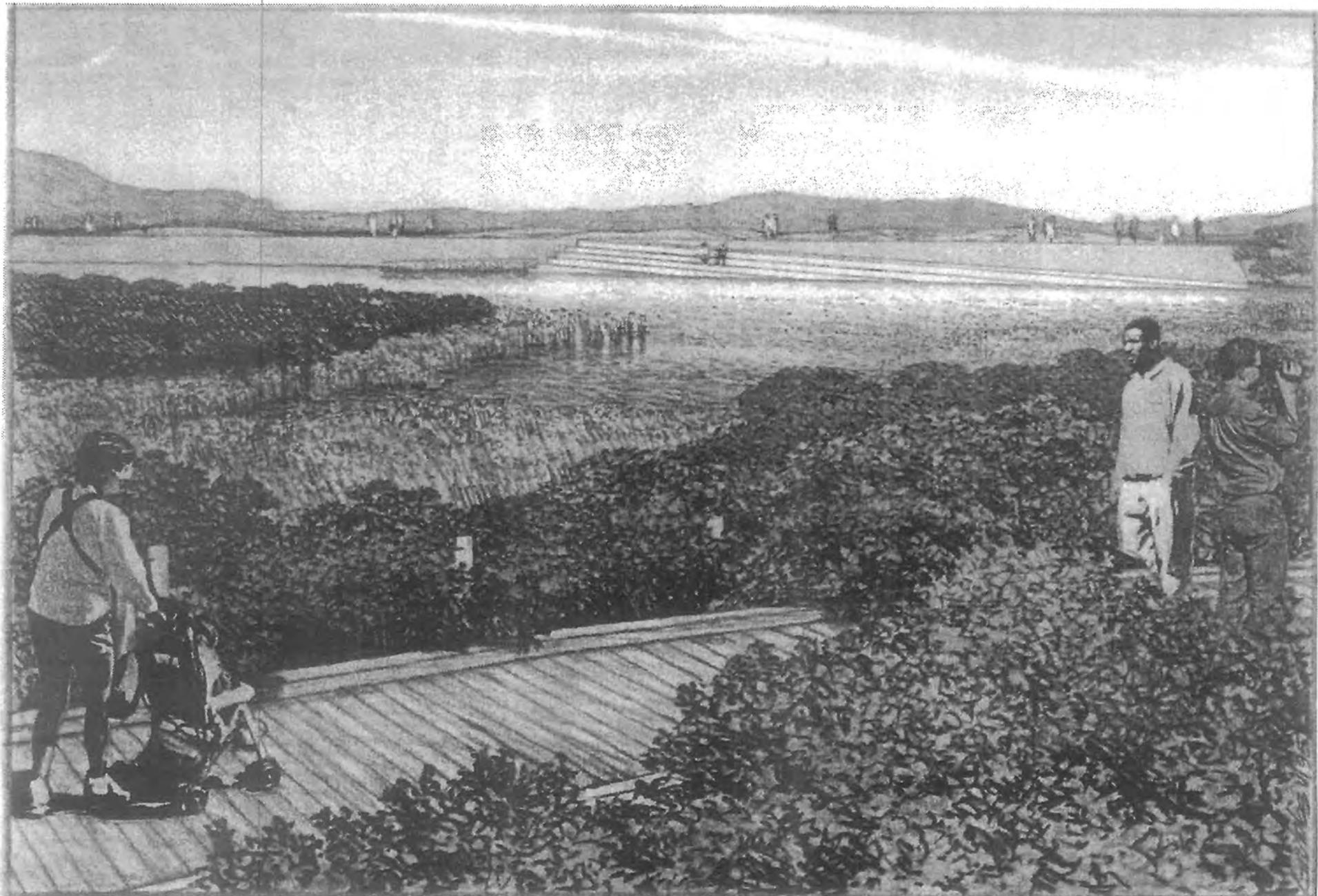




Figure 2-19
Interpretive Overlook at South Edg Marsh

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

designed to be 3-4 feet above the water to allow sunlight for vegetation below. At the south end of the boardwalk near Halleck Street would be a grassy knoll/overlook and gathering area meeting ADA access requirements offering views of the tidal marsh and the bay, as well as providing a place for groups to conduct education activities prior to stepping onto the boardwalk (Figure 2-19). A vegetative buffer and hidden barrier fencing around the overlook would limit potential impacts on wildlife.

Prior to excavation for the tidal marsh, utilities would be capped and covered or removed. A stormwater culvert that conveys runoff from Tennessee Hollow (an area proposed for future stream restoration) to the bay would be intercepted so that the outflow is directed into the wetland. The 72-inch outfall would be replaced with a groin structure to protect the beach. Eventually, following implementation of future stormwater management plan improvements, up to seven stormwater culverts from the adjacent watersheds could connect to the marsh dependent on meeting water quality criteria, allowing elimination of offshore outfalls.

The tidal marsh would be connected to the bay by a natural inlet channel. An approximately 15-foot-wide channel mouth would be excavated to create the connection to the bay. The channel would be shallow enough for wading at lower tide stages but would swell in width to approximately 20-80 feet at high tide. Wading would likely be precluded during these periods. It is estimated that the tidal flux is substantial enough to keep the mouth of the natural inlet open for 20-30 years. After 20-30 years, if the wetland has not been expanded, accumulated sediment may cause the mouth to close intermittently, in which case the channel may need to be cleared mechanically with a backhoe.

Landforms vegetated with dune scrub would separate the marsh from parking in the East Beach area and Mason Street to create a buffer between the tidal marsh and human activity, improve scenic quality, provide a wind buffer, and increase security in the East Beach parking area.

The created tidal marsh itself would be vegetated with annual pickleweed (*Salicornia europa*), perennial pickleweed (*Salicornia* spp.), and cord grass (*Spartina foliosa*) to create a northern coastal salt marsh habitat. It would eventually evolve to be predominantly a vegetated marsh plain drained by

meandering tidal slough channels. Willows (*Salix* sp.) and alkali bulrush (*Scirpus robustus*) would be planted near the discharge from the Tennessee Hollow freshwater stream entering the tidal marsh, creating a central coast riparian shrub community. Plants above the tidal zone would be progressively more upland in character to maximize buffering between the wetland and Mason Street and pedestrian access along the north, east, and west sides. Common northern dune scrub plant species would include beach sagewort (*Artemisia pycnocephala*), coyote brush, chamisso bush lupine (*Lupinus chamissonis*), coast buckwheat (*Eriogonum latifolium*), creeping wild rye (*Leymus triticoides*), seaside brome (*Bromus carinatus* var. *maritimus*), California poppy (*Eschscholzia californica*), and California figwort (*Scrophularia californica*). A list of plants by community type that would be used in these areas is given in Appendix A.

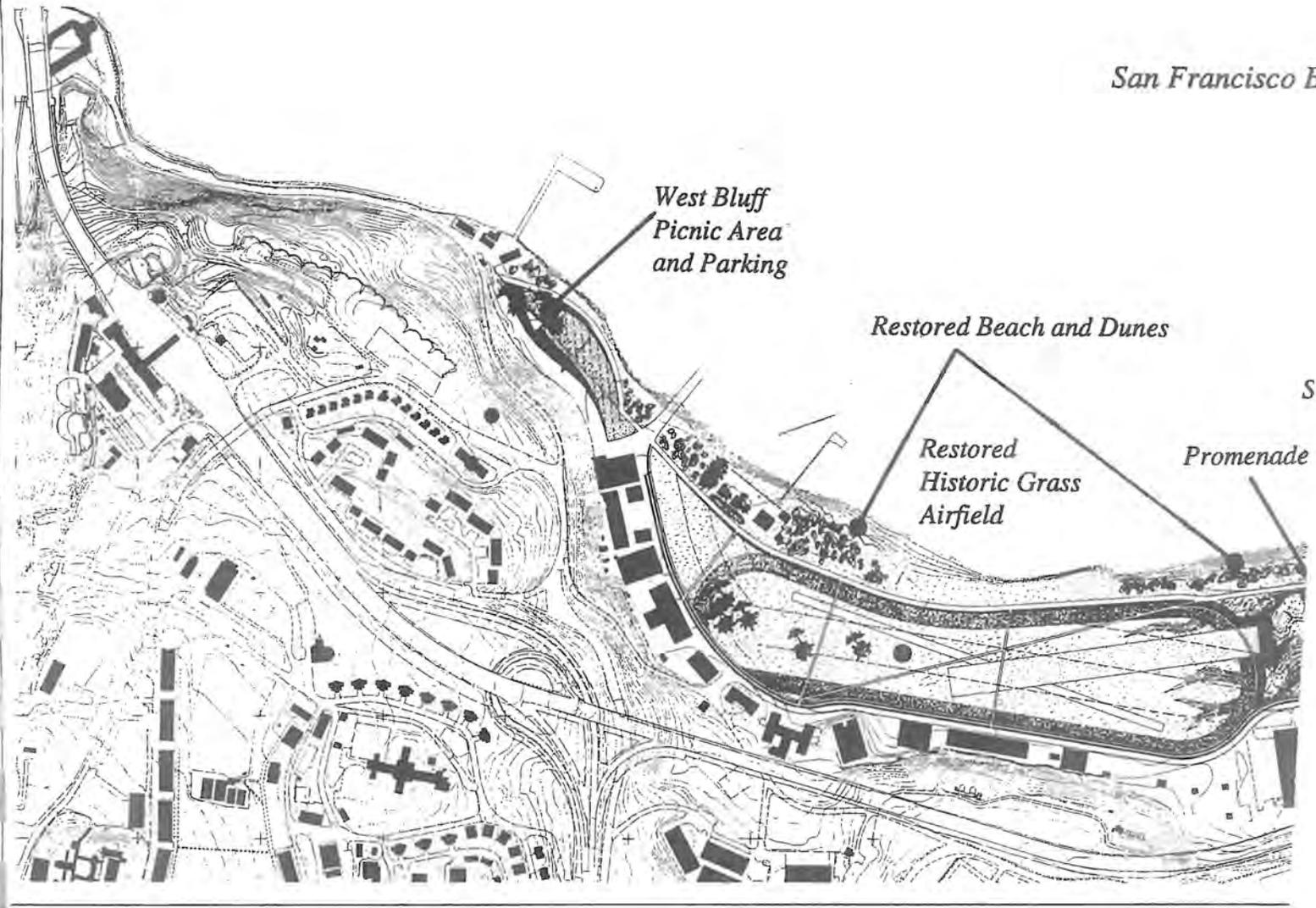
The Proposal is designed to accommodate possible future expansion to the area south of Mason Street. A channel would be created that could direct water to parcels south of Mason Street, if desired, during future development projects. A larger marsh of 30 acres would always have sufficient volume to maintain a natural opening to the bay.

An earthwork structure would define the western edge of the tidal marsh and the former edge of the 3,000-foot airfield. It would have enough gaps to allow the free movement of tidal flow up into the area beyond the structure.

2.2.2 Dune Alternative

Under the Dune Alternative (Figure 2-20), the central portion of the site plan area would contain a stabilized dune field (Figure 2-21). This habitat type is classified as central dune scrub by Holland (1986). The topography would be converted from the relatively flat grade that currently exists to an undulating terrain containing an average 6-foot vertical change in grade. Material excavated from this area would be used in airfield restoration. The dunes would progressively increase in slope and density from west to east. Construction of the dunes would be completed in such a way that buried infrastructure would be avoided.

San Francisco B.



*West Bluff
Picnic Area
and Parking*

Restored Beach and Dunes

*Restored
Historic Grass
Airfield*

Promenade

S







*Restored
Historic Grass
Airfield*

Stabilized Dune Field

Promenade

*East Beach
Parking*

*Restored Beach
and Dunes*



Figure 2-21
Central Dune Field

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Perimeter access to the dune field would be provided from the Promenade and from the Mason Street corridor. Three overlooks with interpretive stations would be constructed along the north edge of the dune field and would be directly accessible from the Promenade, providing areas for pedestrians to stop and view the dune field. The overlooks would have paved surfaces approximately 5 feet below the level of the Promenade and would be connected to the Promenade by sloping and stepped stone terraces.

With an average length of 220 feet, the overlooks would meet the minimum accessibility standards of the ADA. Three or four pedestrian paths would cross the dunes, linking the Promenade with Mason Street. The paths would consist of either a raised wood-plank boardwalk or a 6- to 8-foot-wide surface made of stabilized aggregate or crushed oyster shell, with trailside seating and picnicking areas.

Dune scrub vegetation would be used for this site. Overlapping communities would transition from the existing foredune community to an extensive dune scrub community. Typical plant species in the existing foredunes include coastal sand verbena, beach bur, and beach primrose. The restored community would consist of a diverse mix of native shrubs and perennial and annual forbs and grasses. Common plant species would include beach sagewort, coyote brush, chamisso bush lupine, coast buckwheat, creeping wildrye, seaside brome, California poppy, and California figwort. A complete list of plants that would be used during the restoration is provided in Appendix A. No irrigation would be installed in the dune field, except during the initial plant establishment phase.

2.2.3 No-Action Alternative

The No-Action Alternative is a continuation of existing conditions at Crissy Field, as described in Section 3.0, "Affected Environment". This alternative is the environmental baseline that is used to determine the environmental effects of the two proposed site plan alternatives. Under the No-Action Alternative, none of the site modifications and enhancements described above would be constructed. Actions would be limited to stabilizing portions of the site where buildings are removed and continuing maintenance and management of existing resources and facilities.

2.2.4 Dog Management Options

Because public input related to dog use at Crissy Field was mixed, other dog use management options have been and are still being evaluated. Opinions were voiced for maintaining, enhancing, or eliminating off-leash dog use at Crissy Field. Because it is a current popular and valued activity at Crissy Field, NPS evaluated three options for reducing, maintaining, or enhancing space for this activity. Other dog use options evaluated include off-leash dog walking:

- on the airfield, Promenade, and the beach east of the U.S. Coast Guard station only;
- on the airfield, adjacent beach, and Promenade only; and
- on the Promenade and beach only.

2.3 Related Projects

There are a number of related projects currently underway at the Presidio that involve some or all of the Crissy Field site. These projects are related to the Proposed Action but are being analyzed in separate environmental documentation. The projects are described below.

2.3.1 General Management Plan Amendment for the Presidio of San Francisco

The GMPA for the Presidio of San Francisco amended the 1980 General Management Plan for the GGNRA to include the Presidio. The GMPA is a planning guide that sets forth the basic management philosophy for the Presidio and identifies strategies for addressing issues and achieving management objectives. Crissy Field is one of 13 designated planning areas addressed in the GMPA. The GMPA was subjected to environmental review and documentation as required under NEPA, and a final programmatic EIS was issued in 1994.

The 13 planning areas at the Presidio are:

- Main Post,
- Golden Gate/Fort Point,
- Fort Scott,
- Letterman Complex,
- Cavalry Stables,
- Public Health Service Hospital,
- East Housing Area,
- Crissy Field,
- Presidio Hill,
- National Cemetery,
- Presidio Forest,
- Lobos Creek Valley, and
- Coastal Bluffs.

NPS is currently working on a number of other projects related to implementation of the GMPA concepts and actions for these planning areas.

Presidio Forest Management Plan and Other Vegetation Programs. A management plan for the Presidio forest is being prepared to develop a strategy for revitalizing and maintaining the aging woodland as a key component of the cultural landscape at the Presidio.

Habitat Restoration Program. At various locations at the Presidio, NPS is engaged in habitat restoration and enhancement. This type of work is underway at locations such as the Lobos Creek Valley and the Crissy Field coastal dunes.

Building Rehabilitation and Demolition Programs. Additional NPS work ongoing at the Presidio includes site and building rehabilitation on the Main Post and at Fort Point. A new clubhouse and maintenance facilities are being planned for the Presidio golf course.

A five-phase demolition program is currently in progress at the Presidio. Demolition of structures at Crissy Field is in the final stages. Fifty-three structures at Crissy Field were removed, along with building foundations. Some chain-link fencing is also being removed. Approximately 37,300 square feet of concrete and asphalt will also be removed from the areas adjacent to the structures. The tarmac, paved airfield, and other paved surfaces will be left in place. Project completion is scheduled for fall 1996.

Transportation Programs. The Transportation Demand Management Plan was prepared to address traffic and parking issues at the Presidio. A water shuttle service was also recommended in the GMPA, and its feasibility will be investigated as a separate project. If this project is implemented, visitors would also be able to enter Crissy Field via the water shuttle. It would transport visitors between Fort Mason, Crissy Field, and Fisherman's Wharf. It could possibly have a station near the former U.S. Coast Guard station.

Stormwater Management Plan. A Stormwater Management Plan (Dames & Moore 1994) was developed for the Presidio to assist stormwater planning and management efforts and to ensure that any new stormwater conveyance and water quality improvement facilities complied with current laws and regulations. A component of the water quality improvement plan is the

routing of runoff through the proposed wetland restoration area at Crissy Field.

The plan assesses existing drainage conditions at the Presidio. The goal of the plan is to reduce stormwater discharge and any pollution in stormwater that is discharged from the Presidio through structural improvements and best management (operational) practices. The study contains recommendations for elimination of runoff and guidelines for reducing the contamination of stormwater from oil, chemicals, and other pollutants.

Tennessee Hollow Riparian Corridor. A study conducted by Dames & Moore for NPS (Dames & Moore 1995) evaluated the feasibility of restoration of the Tennessee Hollow riparian corridor consistent with the GMPA. The Tennessee Hollow area currently drains to Crissy Field primarily through stormwater pipelines and open culverts that discharge to the bay. The study concluded that the removal of stormwater pipelines and restoration of surface drainage channels and associated riparian ecosystems was feasible and identified actions to accomplish this restoration. The Proposed Action includes the connection of the Tennessee Hollow flow to the tidal marsh and is consistent with and would benefit from future riparian corridor restoration. Additional planning, design, environmental analysis, and implementation of the riparian restoration would be conducted as a separate project.

2.3.2 Hazardous Materials Remediation

The U.S. Army is conducting an ongoing investigation and cleanup of areas at the Presidio that were contaminated as a result of military operations. The California Department of Toxic Substances Control is the regulatory agency overseeing the Army's cleanup. The Army is presently engaged in activities related to hazardous materials investigation and cleanup throughout the Presidio, including Crissy Field. These activities are separate actions that are not evaluated in this EA. Investigation and cleanup activities are described in this document to provide a complete description of existing conditions in the project area.

2.3.3 Doyle Drive Reconstruction

Doyle Drive (U.S. 101) extends through the entire length of the Presidio, visually and physically separating Crissy Field from the remainder of the Presidio. Its elevated and at-grade sections are deteriorated, do not meet current design or seismic standards, and are scheduled for replacement. The California Department of Transportation (Caltrans) is beginning the design and environmental documentation process for reconstruction of the roadway as a parkway-style road corridor that complements the nature of the Presidio's new status as a national park. This process to begin reconstruction is expected to take 4 years and will include the entire roadway through the Presidio, Marina Boulevard, and Richardson Avenue approaches and provision for direct Presidio access to the Main Post and Crissy Field. Construction is scheduled for completion in 2004.

NPS staff have actively participated in all planning for Doyle Drive reconstruction to ensure that the two planning efforts are properly coordinated. The future redesign and reconstruction of Doyle Drive will be analyzed in a separate environmental documentation for which Caltrans will be the state lead agency.

2.3.4 Golden Gate Bridge Seismic Retrofit Project

The Golden Gate Highway Transportation District is in the process of finalizing the plan specifications and acquiring permits for the first phase of the Golden Gate Bridge Retrofit Project. The 2-year first phase is scheduled to begin in January 1997 and includes retrofit of the north viaduct, lead cleanup of the north and south approaches, and renovation of Presidio Building 989.

2.4 Alternatives Considered but Rejected

Through an extensive public involvement process, NPS worked with the public and affected user groups to narrow the range of reasonable alternatives by early resolution of issues. Also, the GMPA EIS evaluated a broader range of alternatives. Because only alternatives within the bounds of the program stipulated for Crissy Field in the GMPA were considered, the range of alternatives that could be considered was somewhat narrow. The following alternatives were considered for Crissy Field but were rejected because they were infeasible or would not meet the project purpose and objectives.

2.4.1 Alternative Concept Plans for the Greater Crissy Field Planning Area

During the January 1995 public workshop, several concept alternatives were presented that proposed concept designs for the entire 145-acre Crissy Field planning area, including the area south of Mason Street. The boundaries of this planning area generally extend from the waterfront southward to Doyle Drive (minus the commissary and post exchange area) and from Marine Drive/Torpedo Wharf eastward to Marina Green.

A number of issues were identified that were problematic. The Army still uses the commissary and post exchange at Crissy Field with no set date for closing the facilities. Another issue involves the redesign and reconstruction of Doyle Drive/U.S. 101. The design and timetable for completion of this Caltrans project have not been defined thus far to the degree of detail needed to effectively plan for inclusion in the concept plan. One other issue that was identified at the time the alternatives were presented was the availability of funding for a larger scale concept plan. For these reasons, detailed plans for including the portion of Crissy Field south of Mason Street were deferred to a future date. Both action alternatives consider and are compatible with the GMPA concept for the area south of Mason Street.

2.4.2 Alternatives Containing Specific Concept Plan Elements

Four preliminary alternatives were presented at a public workshop on June 13, 1995, for the portion of Crissy Field north of Mason Street. Certain components of these alternatives were subsequently rejected. Various sizes, configurations, and locations for a wetland component to the plan were considered early in the alternative concept development process. Two of the alternatives included a tidal marsh on the central portion of the site. One of the alternatives included a Proposal to create a 6-acre urban wetland that would have a hard, urban edge on one side and a natural edge on the opposite side. This alternative was rejected because the urban edge would limit the ecological value of the created tidal marsh. Two of the alternatives included a 17-acre central meadow that would be designed for use as a picnic area with small topographic features that would allow refuge from the elements. The central meadow component was also rejected in favor of an alternative containing a central dune field that could provide increased ecological values.

A feasibility study conducted for NPS by Dames & Moore (Dames & Moore 1995a) evaluated the feasibility of three alternatives for wetlands restoration: a freshwater backdune marsh, a 30-acre tidal marsh, and a 60-acre tidal marsh. This report concluded that restoration of a freshwater marsh having no tidal influence or connection to the bay was less feasible than restoration of a tidal marsh. This was because of the limited freshwater source, potential for significant seasonal fluctuations in water levels, and limited water circulation. This alternative was rejected from further consideration for these reasons.

The report concluded that tidal marsh restoration was feasible and that restoration of a larger marsh would lower the risk of closure of the entrance channel. However, restoration of a 60-acre marsh would require use of significant portions of the site required for airfield restoration, would not have been consistent with the GMPA, and would have had an adverse effect on the Presidio National Historic Landmark. Both the 60- and 30-acre tidal marsh would require use of portions of the site south of Mason Street, which is currently unavailable and is outside the current planning area boundary. For these reasons, these alternatives were also eliminated from further consideration.

ALTERNATIVES, INCLUDING THE PROPOSED ACTION

Various sizes and locations for configuring the east end parking area were also considered, including elimination of parking north of Mason Street. Elimination of an east end parking facility was rejected because that location is necessary to serve the parking needs generated by visitors to the site.

2.4.3 Severing of Mason Street

One alternative considered for Crissy Field proposed the severing of Mason Street to limit cut-through traffic. This alternative was rejected after the results of traffic modeling were evaluated. The modeling indicated that substantial undesirable changes in local traffic circulation would result from this Proposal.

2.5 Permits and Approvals Required to Implement the Proposal

Documentation of the status of NPS compliance with federal and state laws and regulations is included in Section 5.0, "Consultation and Coordination". The following environmental permits and other approvals would be required to implement the Proposed Action:

NEPA Compliance. After circulation and public review of the draft EA, NPS will prepare a final EA and make a determination about the appropriate environmental clearance document. NPS will prepare a finding of no significant impact (FONSI) statement or, if the Proposed Action would result in substantial adverse environmental effects, NPS will prepare an EIS.

National Historic Preservation Act Compliance. The Proposed Action requires compliance with Section 106 of the National Historic Preservation Act to address potential effects on elements contributing to the Presidio National Historic Landmark.

Clean Water Act Compliance. Some aspects of the Proposed Action would require a permit from the Corps to address modification of the shoreline to comply with Section 404 of the Clean Water Act. Any activities involving excavation or fill below the high tide line, such as construction of the tidal marsh channel inlet, installation of engineered shore protection, and removal of rubble and subsequent maintenance activities, would be subject to Section 404 permit requirements.

Rivers and Harbors Act Compliance. The Proposed Action would also require a permit from the Corps to comply with Section 10 of the Rivers and Harbors Act for work performed that would affect areas subject to ebb and flow of the tide.

State Porter-Cologne Water Quality Control Act Compliance. A National Pollutant Discharge Elimination System (NPDES) permit from the San Francisco Regional Water Quality Control Board (RWQCB) and

compliance with Section 401 of the federal Clean Water Act is required to address potential sources of surface water discharges during construction.

Coastal Zone Management Act Compliance. The Proposed Action requires concurrence by the San Francisco BCDC of a determination of consistency with the San Francisco Bay Plan's designation of Crissy Field as a waterfront park.

McAteer-Petris Act State Compliance. The Proposed Action requires approval from the San Francisco Bay BCDC to comply with the McAteer-Petris Act for placement of material, pilings, or structures; extraction of material; or any substantial change made in use of the bay or within 100 feet of the shoreline.

2.6. Environmental Commitments Included as Part of the Project Design

As part of the Proposal, NPS will implement the following environmental commitments to avoid significant impacts. These commitments are described in more detail in Section 4.2, "Environmental Consequences of the Proposed Action".

2.6.1 Cultural Resources

To avoid disturbing unknown cultural resource sites in areas with potential to contain resources, NPS will implement the archeological monitoring program designed in accordance with the 1994 programmatic agreement (PA). The program establishes procedures that will be used to evaluate and record historic features (as noted in Section 3.3) that may be discovered during project construction.

In the event of discovery of either prehistoric sites or burials, consultation would be initiated immediately with appropriate Native American groups.

2.6.2 Geomorphology and Soils

To avoid siltation and closure of the tidal marsh inlet channel, NPS will monitor conditions and periodically mechanically excavate accumulated sand, if necessary, or construct a culvert to prevent extended periods of channel closure.

2.6.3 Water Resources

To avoid violation of water quality standards and reduce short-term effects on water quality during construction, NPS will comply with conditions of the NPDES general construction activity stormwater permits, including use of

best management practices (BMPs) to minimize soil erosion and other discharges into the bay or natural drainages.

To avoid exposing aquatic organisms in the tidal marsh to hazardous substances that could intercept shallow groundwater, the Army will monitor contaminant levels in the project area. Cleanup of contaminated areas at Crissy Field is the obligation of the Army. The implementation of the Proposed Alternative improvements will be coordinated such that it does not take place before remediation in areas where contamination occurs. The Army's cleanup plans are being developed to be consistent with implementation of the GMPA for the Presidio, including areas at Crissy Field. If levels are found to exceed risk criteria, the Army will identify and implement appropriate corrective measures, such as constructing subsurface barriers, impermeable soil caps, or interceptor drains.

2.6.4 Air Quality

To avoid violation of air quality standards during project construction, NPS will require construction contractors to use equipment that adheres to strict emission standards for nitrogen oxides (NO_x), and to use water or another effective dust palliative to control particulate matter.

An alternative strategy to requiring contractors to use modern low-emission equipment would be to reduce the number of pieces of equipment being operated each day.

2.6.5 Public Health and Safety

To avoid potential exposure of humans or tidal marsh aquatic life to hazardous substances, NPS will coordinate timing of implementation of the Proposal with Army remediation efforts. NPS construction activities would follow Army remediation activities.

Section 3.0

Affected Environment

3.1 Land Use

3.1.1 Regional Context

Crissy Field is the northernmost portion of the Presidio of San Francisco (Figure 1-2). Crissy Field is bordered by San Francisco Bay to the north, Lyon Street to the east, and U.S. Highway 101 (U.S. 101) to the south and west. The 1,480-acre Presidio is at the northern tip of the San Francisco peninsula, on the south side of the Golden Gate Bridge. The entire Presidio is generally characterized by open space with moderately dense pockets of military-related development (e.g., administration offices, housing, warehouses, and barracks). The Presidio was included within the legislative boundary of the GGNRA when the GGNRA was created in 1972. The Presidio was transferred to NPS from the Army in 1994 and is managed by NPS today.

The overall Crissy Field planning area, as designated in the GMPA, covers 145 acres of the 1,480 acres of the entire Presidio (Figures 1-2 and 1-3). The Presidio (including Crissy Field) is surrounded by residential neighborhoods and commercial development of the city/county of San Francisco to the south, San Francisco Bay to the north and east, and the Pacific Ocean to the west. The Crissy Field site plan area for this Proposed Action, generally the portions of the site north of Old Mason Street, represents 100 acres of the 145-acre overall Crissy Field planning area.

3.1.2 Current Land Uses

3.1.2.1 Land Uses Adjacent to Crissy Field

Most of the land south of Crissy Field is associated with the traditional military use of the Presidio. The Presidio today has well-established land uses related to its former military role. In addition to uses for administrative and operational support, there is a substantial amount of residential use. Over time, several thousand people have lived and worked at the Presidio and created a small community in which to live. The Presidio today is in

transition from its former military role to its new status as a national park. It contains the full range of land uses one would find in a small town, including housing, offices, warehouse storage areas, recreation facilities, and shopping areas, in addition to the former military-related facilities such as aircraft hangars and defense batteries. Currently, the land use of almost half the land at the Presidio is open space/recreation, with residential, commercial/office, industrial, institutional, and special use (cemetery and roads) being the next most common land uses. Land uses adjacent to Crissy Field, within the Presidio, include residential, special use (cemetery and roads), commercial/office, industrial, and open space/recreation. U.S. 101 (Doyle Drive) bisects the Presidio and lies directly south of the overall Crissy Field planning area.

The 45 acres of land that are outside the site plan area for the Proposed Action but are a part of the overall Crissy Field planning area lie south of Mason Street and north of U.S. 101. NPS uses buildings at Crissy Field for museum displays, educational classes, offices, maintenance functions, and storage, with some buildings currently vacant. Buildings at Crissy Field operated by other agencies include the post exchange, operated by the Army and Air Force Exchange System, and the post commissary, operated by the Defense Commissary Agency. The post commissary and post exchange are contracted to remain at Crissy Field until September 30, 2006 (Rossi pers. comm.).

Other land uses surrounding Crissy Field and the rest of the Presidio include San Francisco Recreation and Park's "little" Marina Green, the Palace of Fine Arts Theatre, the Exploratorium, Saint Francis Yacht Club and marina, and the Marina District neighborhood, which all lie to the east of Crissy Field. San Francisco Bay and the Pacific Ocean are north and west, respectively, of Crissy Field.

3.1.2.2 Land Uses within the Crissy Field Site Plan Area

The description of land uses in this section focuses on the Crissy Field site plan area (Figure 1-2). Mason Street is the southern boundary of the area, except at the west end, where the proposed airfield restoration would extend slightly south of the existing Mason Street. The eastern boundary of the site plan area is Lyon Street, and the western boundary is the Torpedo Wharf area of Fort Point.

Current land uses at Crissy Field are primarily residential, office, and open space/recreation (Figure 3-1). The majority of the buildings at Crissy Field (i.e., storage sheds, hangars, barracks, and warehouses) were recently removed as part of the building demolition project. The four remaining buildings are part of the historic former U.S. Coast Guard station, located on the western portion of Crissy Field, east of Torpedo Wharf. This cluster of four buildings will be reused by NPS as a water-oriented public facility. Current uses of the buildings include the Gorbachev Foundation, National Oceanic and Atmospheric Administration's Gulf of the Farallones National Marine Fisheries Service headquarters, and NPS dormitories. The west half of Crissy Field includes Fort Point Wharf (the westernmost point of Crissy Field), the historic U.S. Coast Guard station, and an active helipad. The east half of Crissy Field contains parking facilities and unstructured open space, as well as several acres currently fenced and included in the building demolition project, which are being returned to open space. Crissy Field's paved parking lots and large undeveloped space are occasionally used as overflow parking for special events and also as a shuttle staging area.

Extending along the length of the Crissy Field shoreline is the Golden Gate Promenade, a popular recreation path for runners, pedestrians, dog walkers, skaters, and cyclists. Remnants of the military airfield exist south of the Promenade and north of Mason Street. Crissy Field is also the location of sand dune restoration projects and associated dune wildlife along the waterfront. NPS has designated an area between the U.S. Coast Guard station and Fort Point as a waterbird protection area (National Park Service 1994b). The offshore waters provide a world-class boardsailing (windsurfing) area. The parking area at the eastern portion of Crissy Field provides parking for a variety of recreationists and is often used as a staging area by boardsailors. More information on recreation activities at Crissy Field is presented in Section 3.2, "Recreation".

Infrastructure for several utility systems is in place at Crissy Field. Electrical, natural gas, water, sanitary sewer, stormwater, and telecommunications utility systems serviced much of the project area. All utilities, except stormwater systems, are being removed, or capped and abandoned in place, as part of the building demolition project (Swanson pers. comm.).

3.1.3 Relevant Plans and Policies

The following land use plans and policies were analyzed for consistency with the proposed concept plan:

- the National Park Service Management Policies,
- the GMPA,
- the San Francisco Master Plan, and
- the San Francisco Bay Plan.

3.1.3.1 National Park Service Management Policies

The Management Policies (National Park Service 1988) is the basic servicewide policy document for NPS. It provides guidelines for park policy regarding planning, land protection, natural resource management, cultural resource management, wilderness preservation and management, interpretation and education, use of the parks, park facilities, and concessions management. The following general NPS management policies related to natural and cultural resources, visitor use, and facilities are particularly relevant to the Proposed Action:

- The NPS will manage the natural resources of the national park system to maintain, rehabilitate, and perpetuate their inherent integrity.
- Natural resources will be managed with a concern for fundamental ecological processes as well as for individual species and features.
- The NPS will seek to perpetuate native plant life as part of natural ecosystems.
- The NPS will preserve and foster appreciation of the cultural resources in its custody through appropriate programs of research, treatment, protection, and interpretation.

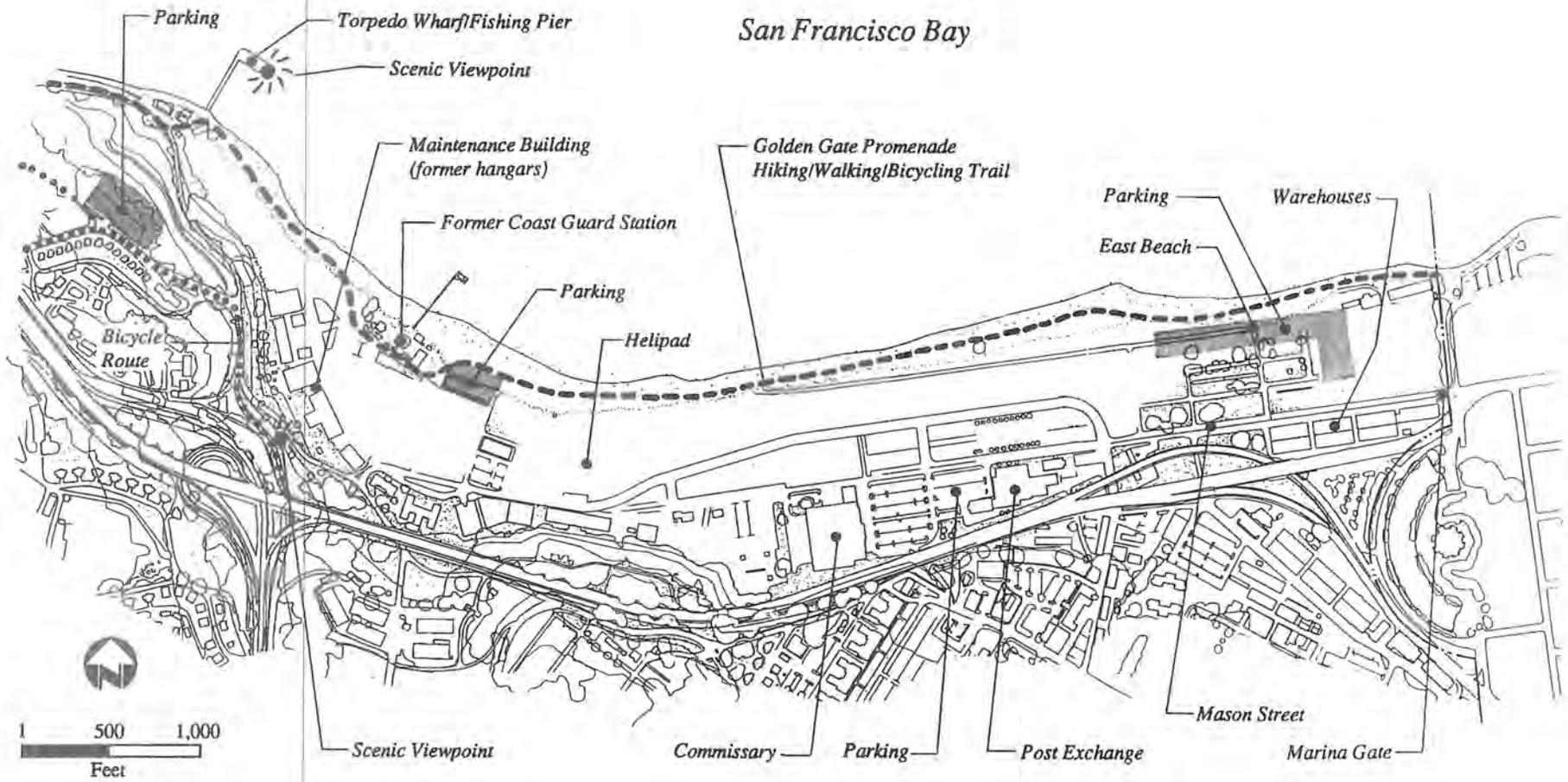


Figure 3-1
Existing Land Uses at Crissy Field

- The NPS will conduct interpretive programs in all parks to instill an understanding and appreciation of the value of parks and their resources; to develop public support for preserving park resources; to provide the information necessary to ensure the successful adaptation of visitors to park environments; and to encourage and facilitate appropriate, safe, minimum-impact use of park resources.
- Trail design will vary to accommodate a range of users and will be appropriate to user patterns and site conditions.
- Facilities will be provided to assist park visitors in appreciating and enjoying the park and understanding its significance.

3.1.3.2 General Management Plan Amendment for the Presidio of San Francisco

The general direction for land use at Crissy Field comes from the GMPA. The GMPA emphasizes Crissy Field's opportunity for bayfront recreation and resource preservation and states the following:

Crissy Field, currently the most public of Presidio open spaces and a landscape imprinted by the technology of various historic periods, will become a "front yard" for the Presidio. The bay, the long stretch of shoreline ideal for all forms of movement and recreation, and the impressive views all contribute to experiences that draw visitors from throughout the world. Crissy Field will be managed to enhance the setting for those experiences while rehabilitating and preserving important historic resources and natural systems. (National Park Service 1994b.)

3.1.3.3 San Francisco Master Plan

The Presidio is under federal jurisdiction and is not subject to state and local land use plans and policies. However, NPS does seek to reduce possible conflicts between NPS mandates and the City of San Francisco's policies and consults with the city to achieve consistency whenever possible (National Park Service 1994b).

The City and County of San Francisco has included some policies concerning the Presidio in the recreation and open space portion of the San Francisco Master Plan. The following are relevant policies included in the San Francisco Master Plan:

- Preserve the open space and natural historic, scenic, and recreational features of the Presidio.
- Provide new public open spaces along the shoreline.
- Develop the Crissy Field area to permit more intensive recreational uses without significantly altering the character of its open landscape. Enhance existing beach and lawn areas to accommodate varied active and passive recreational uses, and enhance views of the Golden Gate. Integrate the landscaping, design, development, and use of the portion of Crissy Field under jurisdiction of the US Army with the portion managed by the National Park Service. Reduce the profile of any development near the National Recreation Area so that it may be screened from view of the shoreline. (City and County of San Francisco Department of City Planning 1988.)

3.1.3.4 San Francisco Bay Plan

The Bay Conservation and Development Commission (BCDC) is the California state agency charged with planning, regulating, and managing the San Francisco Bay segment of the California coastal zone, which consists of San Francisco Bay and its shoreline. BCDC's area of jurisdiction extends 100 feet inland from the mean high-water line (Michaels pers. comm.). BCDC objectives include increased public access to San Francisco Bay and the restriction of unnecessary development or development that would have adverse impacts on the bay. In the San Francisco Bay Plan, BCDC designates Crissy Field as "Waterfront Park, Beach" (San Francisco Bay Conservation and Development Commission 1987).

3.2 Recreation

The Presidio is a popular location for recreationists. More than 2 million people per year visit the coastal attractions of the Presidio, many of which are on Crissy Field (National Park Service 1994a). Crissy Field offers many hiking/walking trails, bicycle trails, picnicking areas, scenic viewing areas, and educational areas. NPS also offers interpretive tours of and programs about the Presidio. Users of Crissy Field include local neighborhood residents, San Francisco Bay Area residents, and visitors from all over the United States and the world. Overall peak recreational use of Crissy Field generally occurs in the fall and summer months (Ozanich pers. comm.).

The 100-acre site plan area of Crissy Field offers numerous opportunities for people to walk, jog, ride bicycles, boardsail, participate in educational and interpretive programs and restoration activities, and enjoy views (Figure 3-1). Table 3-1 provides the size of the physical areas at Crissy Field available for recreation opportunities.

Table 3-1. Land Available for Existing Recreation Opportunities

Existing Recreational Opportunities	Area
Accessible areas (multirecreation activities)	66 acres
Golden Gate Promenade (walking, hiking, bicycling)	1.5 miles
Area currently used for off-leash dog walking	38 acres
East Beach parking area ^a	up to 490 cars
Area fenced off or occupied by structures	14.7 acres

^a Marked and unmarked paved parking.

Source: Hargreaves Associates 1995.

3.2.1 Pedestrian Uses

Most recreationists at Crissy Field are involved in pedestrian-oriented activities such as walking, hiking, and dog walking. A field survey of trail use at Crissy Field, performed in August 1995, showed that the majority of recreationists are pedestrians, joggers, and bicyclists, respectively (Clemons pers. comm.). Hiking and walking trails are provided throughout Crissy Field. The most popular trail is the Golden Gate Promenade, along the Crissy Field shoreline, which provides visitors with a breath-taking view of the bay and the Golden Gate Bridge. The existing Promenade, approximately 1.5 miles long, has a width that varies between 6 feet and 30 feet and has stretches that are surfaced with asphalt, asphalt gravel, and crushed stone. Despite the various widths, surfaces, and conditions, the Promenade accommodates several recreational activities, such as walking, jogging, bicycling, and dog walking. Pedestrian connections from the site to the Main Post are along Halleck Street and the former Bank Street, which was recently converted to a pedestrian path.

3.2.2 Bicycling and Skating

Cycling and skating are also popular activities at Crissy Field. Cyclists and skaters (i.e., in-line skaters, skateboarders, rollerskaters) use various paved/hard-surface portions of the Promenade and bicycle routes located just west of the Crissy Field site plan area. The westernmost portion of the Promenade connects to other bicycle routes that extend throughout the rest of the Presidio.

3.2.3 Dog Walking

Crissy Field is a very popular place for dog walking. The beach, Promenade, and fenced area north of New Mason Street are a mix of paved areas and grassy, open space that is often used for voice-command, off-leash dog walking.

3.2.4 Water-Related Recreation

Crissy Field's 1.3-mile-long shoreline on the bay provides excellent opportunities for water-related recreation activities. Although the water is generally too cold for people to swim in, other recreationists such as beach-walkers/runners and dog-walkers take advantage of Crissy Field's long shoreline. High winds, tide conditions, and access to the bay waters create world-class boardsailing (windsurfing) conditions. Peak boardsailing use generally occurs between mid-March and mid-September (National Park Service 1994b, Robberson pers. comm.). Prime boardsailing launching is along the sandy portions of the East Beach from just west of the large outfall, extending east to the rubble. Catamarans and kayaks are also occasionally launched from the Crissy Field shoreline from both the east and west end parking areas.

3.2.5 Special Events

The primarily flat, open spaces of Crissy Field have been a popular location for organized special events, in addition to other daily recreational activities. Special events are scheduled at Crissy Field almost monthly; these include fun runs and benefit walks (along the Promenade) and cultural events/celebrations. Fleet Week, while not an NPS Crissy Field event, does result in the largest event-related use of Crissy Field. It is an annual fall event in the Bay Area that draws thousands of spectators along Crissy Field's shoreline to view airplanes performing in the sky. (Ozanich pers. comm.) Crissy Field's shoreline area was also formerly the home of the Fourth of July fireworks display, which drew approximately 75,000 people annually (Haller 1994). However, since 1993, all Fourth of July event venues have moved to Aquatic Park and the city's northeast waterfront, resulting in greatly reduced use of Crissy Field. Crissy Field's paved parking lots and large undeveloped space are used as overflow parking for special events and also as a shuttle staging area to other GGNRA special events in the local area.

3.3 Cultural Resources

Information for the following sections was obtained primarily from the redocumentation of the Presidio of San Francisco National Historic Landmark District (National Park Service 1993), the draft Presidio of San Francisco Archaeological Management Plan (Adams 1995), and *The Last Word in Airfields: A Special History Study of Crissy Field, Presidio of San Francisco* (Haller 1994).

3.3.1 History of the Presidio

The Ohlone Indians were the earliest inhabitants of the area now occupied by the Presidio. Ohlone settlements populated the coastal areas between Big Sur and the San Francisco peninsula. The Ohlone were hunter-gatherers, living in extended family units and depending on the abundant plant and animal resources of the area for subsistence. (National Park Service 1993.)

The Presidio was established as a military post in 1776 during Spain's colonial expansion (Haller 1994, Thompson and Woodbridge 1992). When Spain's colonial efforts in Mexico collapsed, the Presidio passed quietly into the hands of the new Mexican government in 1821. In 1846, the United States declared war on Mexico, and California soon passed into American hands, with the Presidio subsequently becoming a U.S. Army post. The post played an important role in guarding San Francisco Bay and also helped facilitate the settlement of the American West. It is the oldest Army installation operating in the American West and one of the longest garrisoned posts in the country. (Haller 1994.)

3.3.2 History of Crissy Field

Crissy Field is in the northern portion of the Presidio, where the Presidio meets San Francisco Bay. Prior to its settlement, the area was a tidal marsh with sand dunes on the northeast side. Native Americans probably gathered clams and mussels in the marsh area. Midden sites and a Native American burial site have been located in the area (Haller 1994).

After acquiring the Presidio, the U.S. Army began constructing roads and buildings on portions of Crissy Field. Between 1863 and 1865, a road along the Presidio coastline was completed. By 1870, the U.S. Army had built the first of a series of quartermaster wharves and roadways crossing the area on a north-south axis "to connect the wharf to the main post" (Haller 1994). In following years, the Quartermaster Corps constructed a number of warehouses on portions of Crissy Field.

In preparation for the Panama-Pacific International Exposition, Crissy Field was filled with material dredged from the bay, obliterating most of the natural and cultural landscape features, with only a "footprint of the old toll road, now called Marine Drive, and the sand dunes to the north" surviving (Haller 1994). During the exposition, the western portion of the landfill area contained a 1-mile automobile race track that was also used as a drill ground and aviation field. After the end of the exposition, the Army continued using the level field for its early air operations until 1919. In 1919, it was determined that Crissy Field met all the requirements of both the Coast Artillery Corps and the Air Service for an Air Coast Defense Station. Crissy Field's mission was to be an airfield to "cooperate with the artillery defenses of San Francisco Bay by scouting for the approach of an enemy, observing and correcting the fire of our guns, and facilitating cooperation with troops in the field" (Haller 1994). The permanent airfield was built in 1921 (Figure 3-2). The airfield was named after Major Dana H. Crissy, who died in a crash after taking off from the airfield during the Army's Transcontinental Reliability and Endurance Test, testing the "practical limits of long-range air power" in 1919 (Haller 1994).

Crissy Field was the site of many developments in military aviation history during the same era in which Charles Lindbergh and Amelia Earhart made their famous flights. Famous aviators, such as Major Henry "Hap" Arnold, George H. Brett, Delos C. Emmons, Lowell Smith, and Russell Maughan, were stationed at Crissy Field, and it was a place where history-making long-distance flights began and ended. In 1924, the first dawn-to-dusk transcontinental flight ended in triumph at Crissy Field and later that same year Crissy Field was a part of the Army's Round-the-World Race. The Round-the-World Race is considered the most important pioneering flight of its day. In 1925, Crissy Field was used to prepare the two U.S. Navy seaplanes that made the first attempt to fly from the mainland to Hawaii.

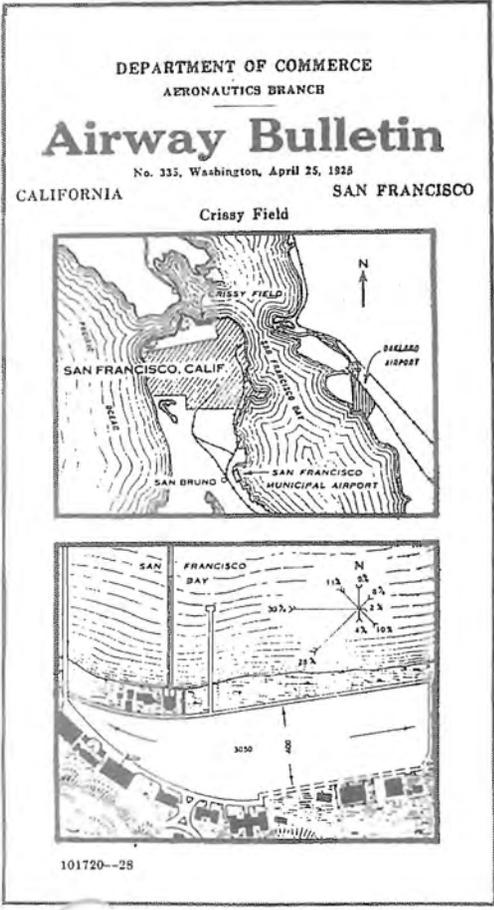
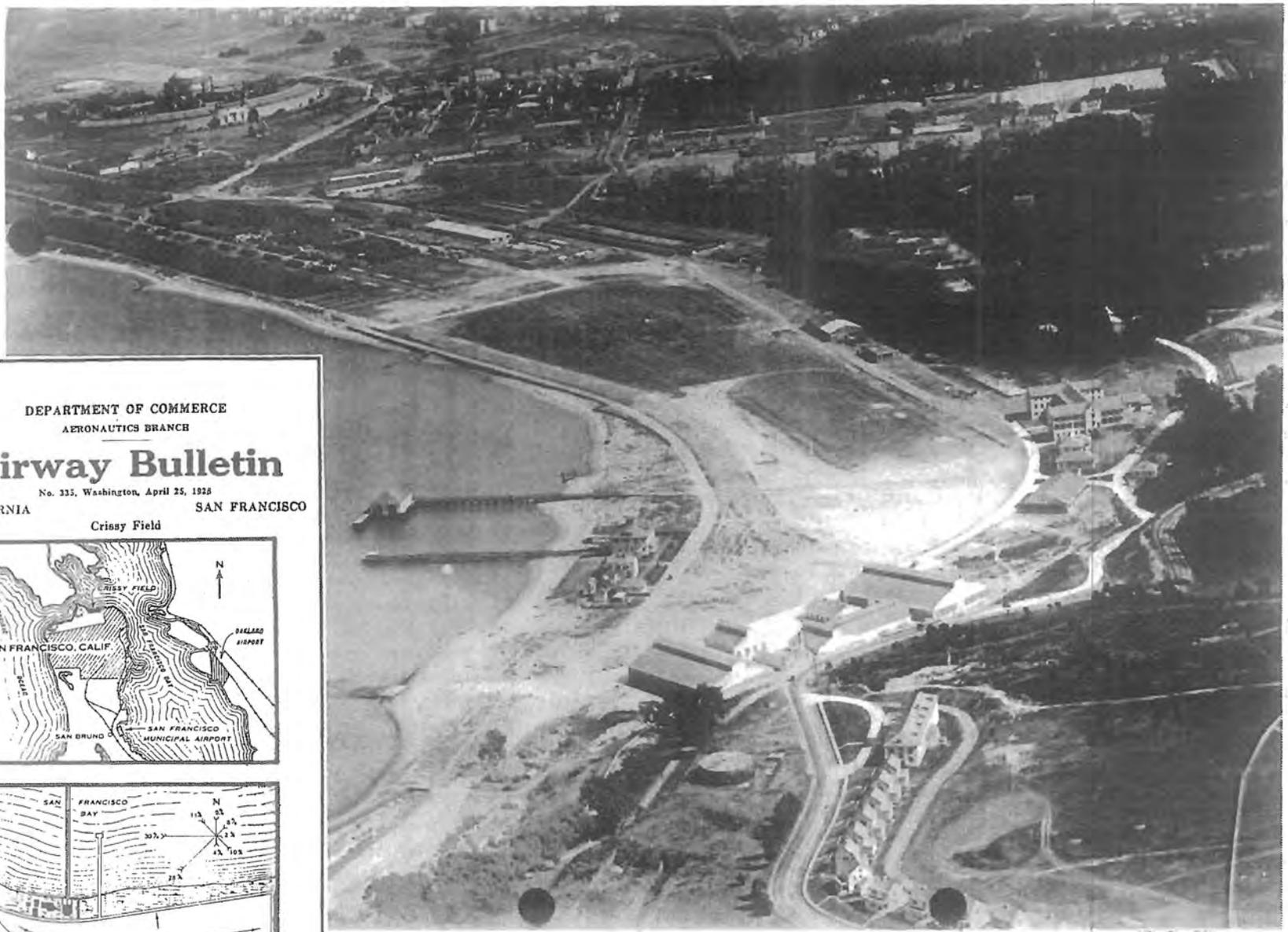


Figure 3-2
Crissy Field Looking East, circa 1921

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However, the first attempt was unsuccessful; the second try, made two years later by land planes staged out of Crissy Field, was a success. (Haller 1994.)

In 1936, Crissy Field closed as a first-line air base because of the continual windy, foggy weather; the construction of the Golden Gate Bridge (which made flying even more difficult); and Crissy Field's location near the ocean (which made Crissy Field susceptible to enemy attacks by sea). The recently activated Hamilton Field in Marin County became the new location for the Air Corps. During World War II, after Crissy Field was closed as a first-line air base, only light aircraft used the field, and the landing field increasingly became an assembly area for the mobilization of troops. With the coming of World War II, temporary mobilization-type barracks were built at both ends of the airfield, and more of the landing strip was paved. The former air mail hangar at Crissy Field (building 640) was used as barracks and classrooms for training Japanese-American soldiers in the Army's highly secret Military Intelligence Service Language School, the predecessor of the Defense Language Institute. (Haller 1994.)

After World War II, the Sixth Army Flight Detachment operated light airplanes and helicopters from the paved strip, now called Crissy Army Airfield. Major improvements were made in 1959, resulting in the repaving of the landing mat to its present-day configuration and the placement of rubble along the shoreline. Also in 1959, the engineer field maintenance building (924) was constructed next to the old landplane hangar. Light planes used the field until 1974, when the field was finally closed to fixed-wing aircraft and then was used solely as a heliport. The former transportation areas to the south of Mason Street and west of Halleck Street were replaced by the commissary building in 1989. Today, the west end of the field continues in use as a helipad for emergency use. (Haller 1994.)

In October 1972, the GGNRA was established. The first portion of the Presidio to pass from day-to-day Army control to the GGNRA was the northern portion of Crissy Field, including the sand dunes and beach area. By September 1994, the entire Presidio had passed into the care of NPS.

3.3.3 Status of the National Historic Landmark

The Presidio of San Francisco was designated a National Historic Landmark on June 13, 1962. This nomination was extensively updated in 1992 and specific features were listed as contributing or noncontributing to the landmark at this time. The landmark included the entire military reservation, more than 1,400 acres. The Presidio of San Francisco Landmark district, updated in 1992, contains 870 buildings that represent a variety of military architectural styles dating from the Civil War to the present. Of the 870 buildings, 510 have been identified as contributing to the National Historic Landmark district (National Park Service 1992). The landmark also includes designed landscape features, such as the historic forest, and infrastructure features, such as roads. Archaeological sites and features, both predicted and known, are also included in the landmark. The Presidio is counted as one historic archaeological site consisting of 50 major areas or features. Combined with the buildings, these sites, structures, and objects total 662 resources that contribute to the landmark, representing the full range of military history (Spanish, Mexican, and American) at the Presidio. The landmark's themes of significance include military, exploration and settlement, Spanish settlement, and historic archaeology. The period of historical significance extends from 1776 to 1945. Prehistoric sites do not contribute to the landmark but could be eligible for listing in the National Register of Historic Places.

Within the National Historic Landmark is Crissy Field. Crissy Field is nationally significant for the following reasons: it was the first air coast defense station on the Pacific coast and is the only military airfield in California that retains historic features of the 1920s; it is the only Army air base in the western United States active on a continuous basis from 1919 to 1936; it is associated with individuals who were important because of their role in developing American air power; it was the site of many aviation "firsts" during its heyday; and it was the location of the Military Intelligence Service Language School. Crissy Field is regionally significant because of the role it played in assisting other agencies such as the U.S. Forest Service, the U. S. Geological Survey, and the Smithsonian Institution in the management, mapping, and aerial exploration of the western United States.

It is the only Army airfield in the western United States that was active on a continuous basis from 1919 to 1936. Crissy Field is locally significant because it is the oldest extant airfield in the Bay Area. (Haller 1994.)

3.3.4 Cultural Resources Present in the Crissy Field Area

Crissy Field is one of the many discrete areas of the Presidio that contribute to the National Historic Landmark. Elements associated with Crissy Field that contribute to the landmark are the 62 buildings and the historic designed landscape that make up the airfield and related features. The Crissy Field area also consists of resources that are not related to the airfield but contribute to the National Historic Landmark and are considered significant in accordance with the National Landmark criteria. These resources primarily consist of historic archaeological sites and features, including the wreckage of the 18th-century packet *San Carlos* (El Filipino); the remains of sites and structures related to the anchorage; wharf structure remains and building remains of the 19th-century and 20th-century Quartermaster depots; archaeological features associated with the Fort Point Life Saving Station; and "Herman's House", a domestic/recreational archaeological site.

Historic archaeological resources also include the predicted remains of transportation corridors along the bay shore and Fort Point Road, remnants of the Belt Line Railroad along old Mason Street, and elements of the causeway from Lower Halleck Street to the Quartermaster wharves. Finally, it is believed that the Crissy Field area was also the site of generalized refuse disposal during the Presidio's long tenure, and is also likely to contain resources associated with refuse deposited following the 1906 earthquake.

Prehistoric resources are also known to exist in the vicinity of Crissy Field and are considered potentially eligible for listing in the National Register of Historic Places. Two prehistoric sites, CA-SFR-6 and CA-SFR-26, also have been identified in the vicinity of proposed ground disturbance. The exact location and boundaries of these sites are not known because reference points used to plot their location are no longer present. CA-SFR-6 was identified in 1912 during the Army's filling of the wetland to prepare for the Panama-Pacific International Exposition. At that time, the site was characterized as a

mound containing faunal material, shell, and human remains. Researchers have hypothesized that the mound was located at the edge of the former marsh. The site was reportedly covered by the Panama-Pacific International Exposition.

CA-SFR-26 was discovered in 1972 by the Army, working in the area adjacent to the location of CA-SFR-6. The site consisted of a single, incomplete human interment of Native American origin accompanied by a cut mammal-bone tube. The skeletal material was given to the California Native American Heritage Commission for reburial.

It has been speculated that additional prehistoric sites could be present at Crissy Field in the area around the former location of wetlands. These sites, should they exist, are likely to be buried under several feet of fill.

3.3.5 Status of Compliance with the National Historic Preservation Act

On October 1, 1994, a Programmatic Agreement (PA) on the actions described in the GMPA was signed by the State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), and NPS. The PA states that all actions described in the GMPA as well as most operating and maintenance activities undertaken at the Presidio can be approved by GGNRA historic preservation staff. The PA requires that the GGNRA staff produce an annual report outlining the actions certified in the previous year through the PA and provide copies to the SHPO and the ACHP.

The GMPA also described several actions that are to occur as part of implementation of the Crissy Field site plan, including building demolition, wetland restoration, restoration of the historic airfield, and rehabilitation of remaining historic structures. The effects of these actions on the historic qualities of the Presidio of San Francisco National Historic Landmark were addressed in the GMPA PA.

The GMPA PA also outlines procedures for determining which projects may have greater effects on historic properties than those covered by the PA and

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includes a requirement for review by the SHPO and procedures for guiding repair and stabilization projects in emergency situations. The 1995 NPS servicewide PA removed the requirement for the Western Regional Office to review actions that occur in the GGNRA.

3.4 Geomorphology and Soils

3.4.1 Pre-Settlement Natural Coastal Environment and Historical Changes

At the time of the first European settlement at the Presidio, the area now known as Crissy Field consisted of a sand spit, with beach sand and sand dunes enclosing a backdune tidal marsh, mudflats, and slough, and a backdune freshwater lagoon and marsh. The backdune marsh was the only one known to exist within San Francisco Bay. Figure 3-3 shows the outline of a 1851 U.S. Coast Survey map of the Presidio shoreline with dune and marsh features superimposed on a present-day map of Crissy Field (Dames & Moore 1995a).

The sand spit extended about 1.2 miles east from Fort Point along the Presidio shoreline and made a bend to the southeast just past the eastern boundary of the present project area, where the present Marina District of San Francisco lies on bay fill. The sand spit widened from west to east, with an area of sand dunes forming behind the central and eastern Presidio beach. A narrow, multibranching estuarine slough coursed through the tidal marsh, with a 150-foot-wide channel entrance at the southernmost point of Marina Beach. The backdune freshwater marsh southeast of the present U.S. Coast Guard station was cut off from direct tidal influence by the sand dunes and was fed by runoff from the Fort Scott area of the Presidio. In 1851, the Presidio coastal area consisted of about 97 acres of tidal marsh, 10 acres of mudflats and sandflats, and 20 acres of subtidal channels (Dames & Moore 1995a). This type of natural environment is inherently dynamic, but a degree of temporary equilibrium in the landscape system may have developed by the time of the founding of the Spanish Presidio.

By 1870, the first of several roads had been built across the estuary, and disturbance of the natural functioning of the marsh by human activity had begun. The roads were built to reach wharves constructed on the beach, and the road embankments severely constricted tidal flow. The filling of the tidal marsh also began at this time. By 1894, the wetland area had diminished to about 80 acres and the mouth of the estuary had been relocated to the west. Between 1912 and 1915, the marsh was completely filled with 360,000 cubic

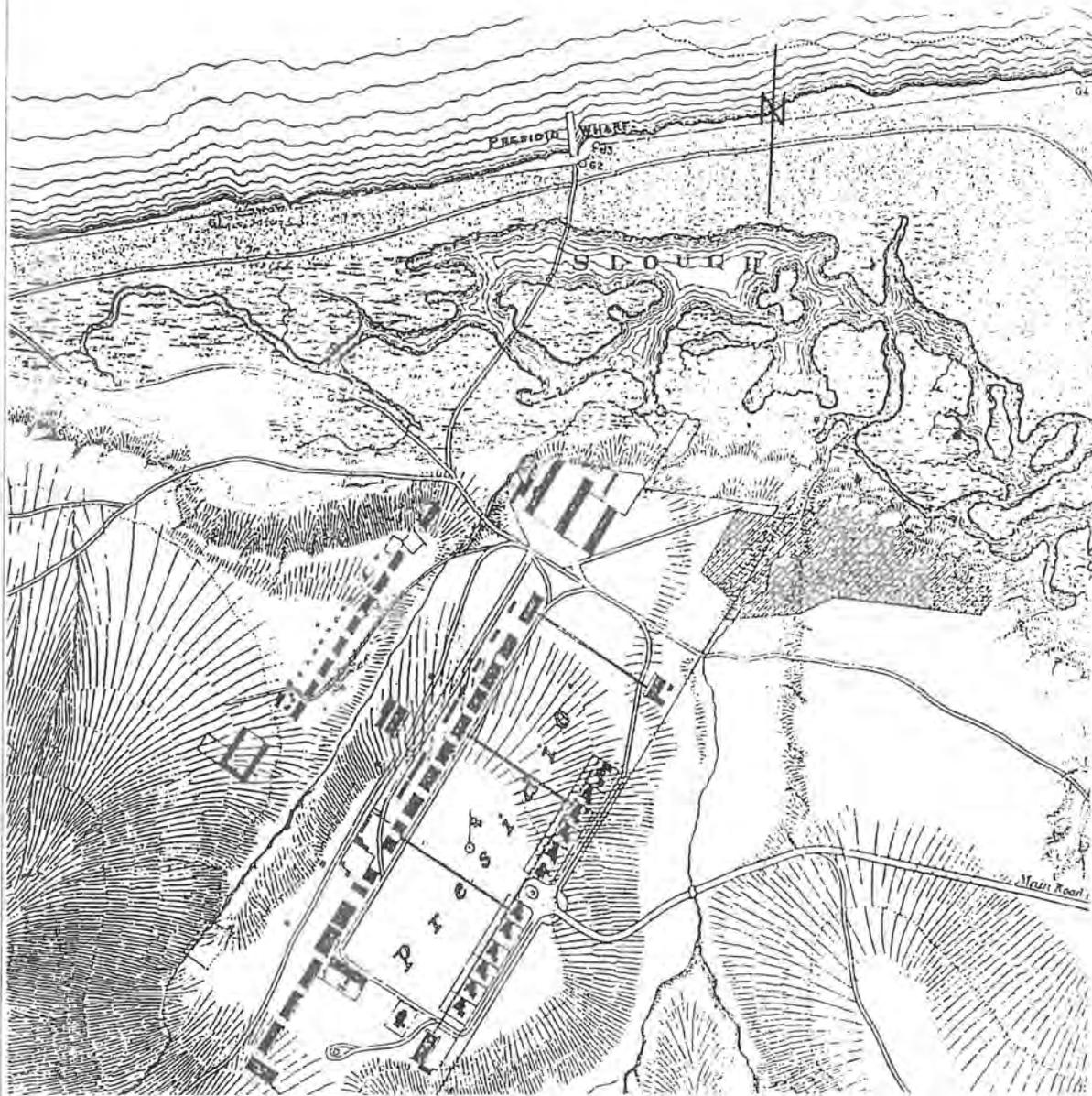
yards of sand dredged from the bay (Dames & Moore 1995a) to create grounds for the 1915 Panama-Pacific International Exposition (Philip Williams & Associates 1986), and the area subsequently was used as an airfield.

3.4.2 Existing Coastal Geomorphology

The beach and sand-spit shoreline of Crissy Field was formed and is controlled by the action of opposing northwesterly and northeasterly waves (Philip Williams & Associates 1986, Dames & Moore 1995a). The northwesterly waves are wind and ocean waves known as swells that enter through the Golden Gate. The ocean swells are large waves generated by storms in the north Pacific. These swells break up into refraction and diffraction patterns as they enter the Golden Gate. The energy of the swells is attenuated to the extent that when ocean swells reached a record 23 feet in 1983, waves along the north shore of San Francisco were less than 1 foot high. The predominant wave energy is contributed by wind waves from the northwest; however, the highest waves are caused by northeasterly winds. The northeasterly waves result from winds blowing across the long stretches of open bay water, known as fetches. The waves generated by these winds, called seas, are estimated to have a height of 1.7 feet along the north shore of San Francisco.

Crissy Field beach sands are naturally in a state of constant flux in response to the action of wind and waves, a state referred to as gross littoral transport. The net littoral transport, or overall result of wind and wave action on the Crissy Field beach, is movement of sand from west to east along the shoreline. The amount and rate of transported sand may be inferred from the dredging required to maintain the St. Francis Yacht Harbor, which is just east of the east end of Crissy Field beach. The average dredging of the sand shoal at the harbor entrance has been 9,000 cubic yards per year since 1988 (Dames & Moore 1995a). Under the historical natural conditions of the former Crissy Field tidal marsh and slough, the tendency for the littoral transport of sand to close the slough entrance would have been offset by the scouring action of tidal flux. An offshore sand bar formed as sand bypassed the slough entrance and continued moving east.

A survey of existing shoreline conditions was conducted, and the results are presented in Figure 3-4. The shoreline consists of alternating areas of beach



Source: Thompson and Woodbridge 1992.

Figure 3-3
Historical Wetlands 1870

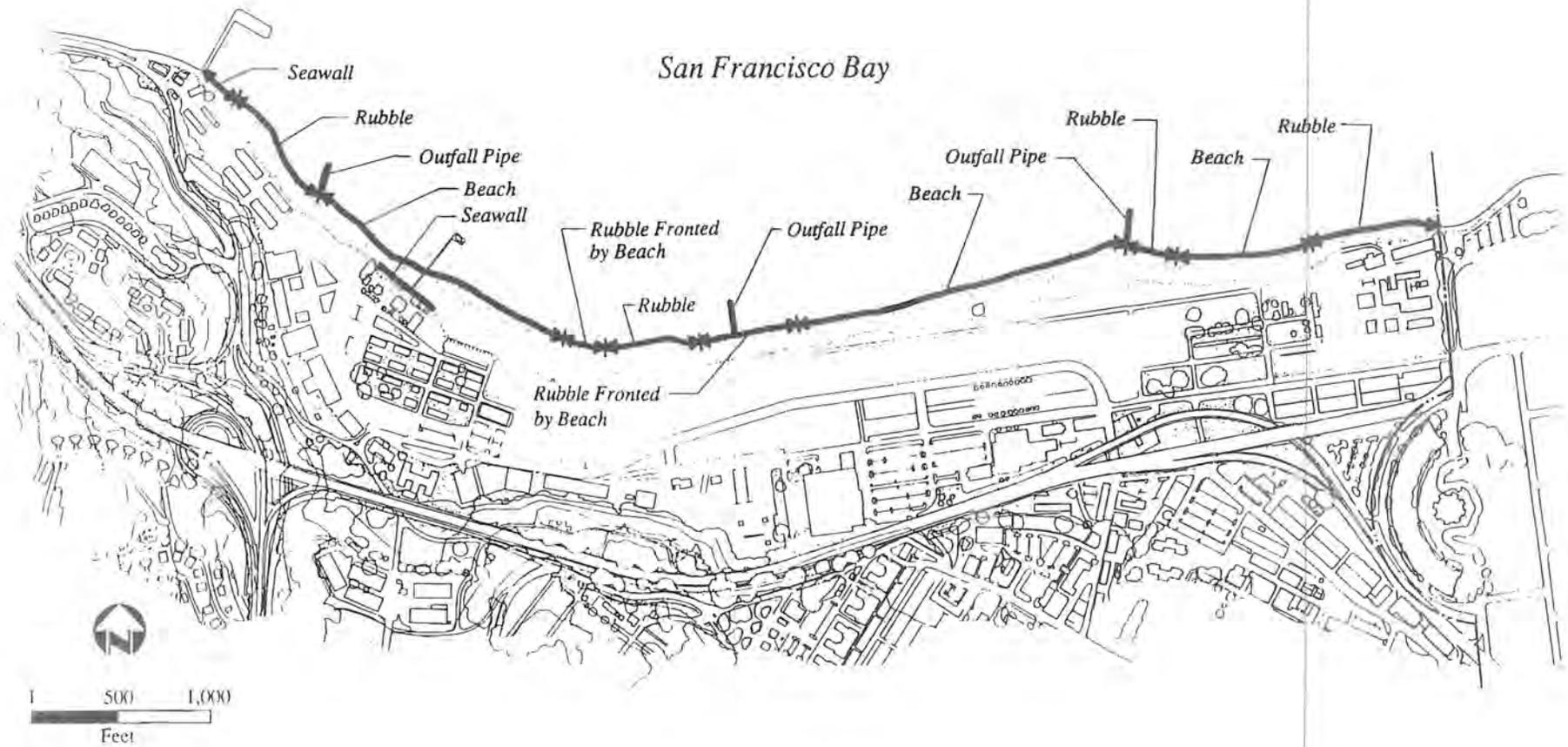


Figure 3-4
Existing Crissy Field Shoreline

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sand and concrete and other rubble. Currently about 3,100 feet of shoreline is rubble. Two beach stretches are backed by strips of rubble. This condition implies that the present sand beaches accumulated since the placement of the rubble. A comparison of historical and present-day maps (Philip Williams & Associates 1986) indicated the possibility of beach extension within the twentieth century, but this could not be determined conclusively. The report's overall assessment is that the shoreline seems stable (Philip Williams & Associates 1986), with the exception of the 1983 storm described below.

During the severe Pacific storm of 1983, high-energy waves caused severe damage along the California coastline. At Crissy Field, shoreline damage was limited to the far west end around the fishing pier; the rubble wall west of the pier and the seawall east of the pier were damaged. In fact, sand accretion occurred along much of the Crissy Field shoreline during the 1983 storm (Philip Williams & Associates 1986). The greatest observed accretion was at the U.S. Coast Guard station, where the beach was extended 40-80 feet in width, and 4-6 feet in height during the storm. Sand was also observed to accrete on the west side of the eastern outfall pipe (Philip Williams & Associates 1986).

3.4.3 Soil and Substrate

The soil and underlying substrate of Crissy Field presently consist of natural dune and beach sand, and sand and debris fill covering bay mud (Dames & Moore 1995a). The debris fill consists of road base material, concrete rubble, copper pipe, metal, and brick fragments and ranges in thickness from 2 feet to 6 feet. The thickness of bay mud ranges from about 3 feet to 8 feet. Underlying the bay mud are sand and other marine sediments. The marine sediments lie on serpentine and graywacke bedrock of the Franciscan formation, which ranges in depth from 20 feet to 60 feet from the ground surface. (Figure 3-5). Although a portion of the historical tidal marsh existed in the central part of the site plan area, most of this wetland was south of the site plan area (Figure 3-3). Bay mud, however, was encountered in borings under the historical dunes, indicating dune encroachment onto former estuary and tidal marsh.

Soil samples from four borings in the eastern half of the project area were collected for chemical and nutrient testing (Dames & Moore 1995a). Two borings were under pavement, and two borings were in sparsely vegetated areas. Soil samples were taken from depths of approximately 3 feet and 6 feet in each boring, with the addition of a sample from 9.5 feet in the only boring to encounter clay or bay mud. The other samples consisted mostly of sand. All soil samples were tested for organic matter content, pH, electrical conductivity (salinity), cation exchange capacity, and macronutrient content.

The test results show that the sandy soil is slightly to moderately alkaline; nonsaline; very low in organic matter content, cation exchange capacity, nitrogen, and phosphorus; and low in potassium and sulfur. In other words, the sandy soil is largely infertile; for natural vegetation restoration, it would be suitable for pioneering or early seral dune vegetation that has the ability to colonize infertile sand dunes. Because the samples were taken at a depth of 3 feet and deeper, any increased nutrient availability from nutrient cycling in the vegetated areas was not detected.

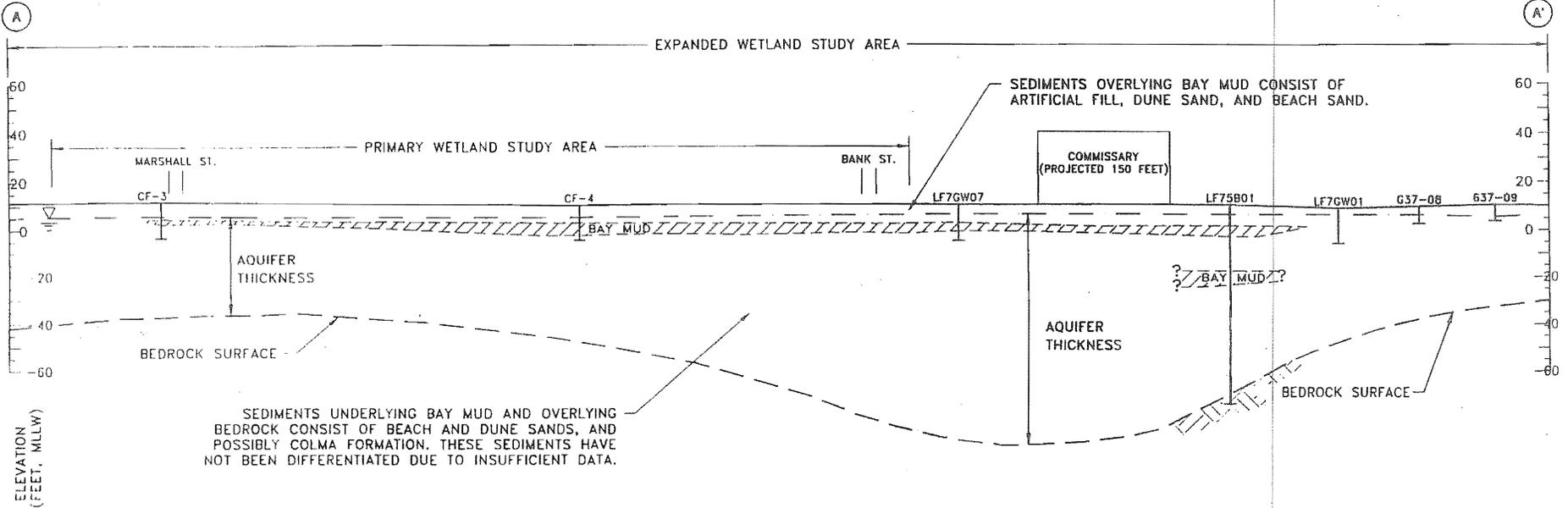
The bay mud clay and the sand layer above it have moderate levels of organic matter; low to moderate salinity; increasing salinity, alkalinity, and cation exchange capacity with depth; and elevated phosphorus, potassium, and sulfur. Nitrogen remains low; calcium content is about the same for the sand and clay and decreases with depth. The bay mud clay is more fertile than the sand and has higher salinity and alkalinity, as would be required for tidal marsh vegetation. Interestingly, sand overlying bay mud also has the same characteristics, although to a lesser degree.

3.4.4 Seismicity and Tsunamis

The unconsolidated sand fill, saturated with groundwater in subsurface layers, and overlying bay mud have a very high liquefaction potential during a major seismic event. Liquefaction occurred in the Marina District of San Francisco (east of Crissy Field) during the Loma Prieta earthquake of 1989, resulting in severe and widespread damage. However, little damage was sustained by the buildings at Crissy Field. The majority of buildings at Crissy Field have been removed under a separate action, the building demolition project. The remaining proposed recreational land uses would

EAST CRISSY FIELD

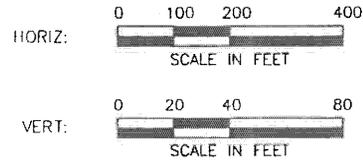
WEST CRISSY FIELD



LEGEND:

- WATER TABLE SURFACE, OCTOBER 1993
- BEDROCK SURFACE (INFERRED FROM SOIL BORING DATA IN THE CRISSY FIELD AREA)
- QUERY INDICATES UNCERTAINTY IN LATERAL EXTENT OF BAY MUD
- SOIL BORING OR MONITORING WELL

LOCATION OF PROFILE SHOWN ON FIGURE 4-5



Note: Cross section is from Janowitz Street to the helipad, between Mason Street and Old Mason Street.

Source: Dames & Moore 1995a.

Figure 3-5
Cross Section of Soil Substrate at Crissy Field

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not subject users of Crissy Field to a substantial threat of property damage or personal injury resulting from liquefaction. Therefore, the seismic hazard of liquefaction is not discussed further in this document.

Crissy Field may also be subject to the large ocean waves generated in an earthquake, known as tsunamis. The 100-year tsunami elevation is estimated as 7.9 feet National Geodetic Vertical Datum (NGVD); the largest historical tsunami in San Francisco Bay, caused by the 1964 Alaskan earthquake, measured 7.5 feet at the Golden Gate (Dames & Moore 1995a). There is no documentation of damage at Crissy Field resulting from the 1964 tsunami.

3.5 Water Resources

This section describes the hydrology and water quality of existing surface water, groundwater, and historically occurring wetland resources at Crissy Field. It also describes applicable water quality laws and permit requirements.

3.5.1 Natural Drainages

3.5.1.1 Surface Hydrology

Very little comprehensive information exists for the Presidio and Crissy Field areas regarding historical characteristics of surface water resources. Natural stream channels, including the perennial stream of the Tennessee Hollow drainage area and smaller unnamed drainages (normally dry in summer), once discharged to the large coastal wetland that extended the length of the bay shoreline for several miles (Figure 3-3) at the existing location of Crissy Field. Changes made to topography, vegetation, water courses, roads, and buildings have substantially altered the rates and volumes of drainage and recharge characteristics of the groundwater aquifer of the Presidio and Crissy Field. The wetlands were filled to facilitate development of the 1915 Panama-Pacific International Exposition and, subsequently, the airfield, and the natural streamflows were routed through buried culverts to outfalls at several locations along the shoreline.

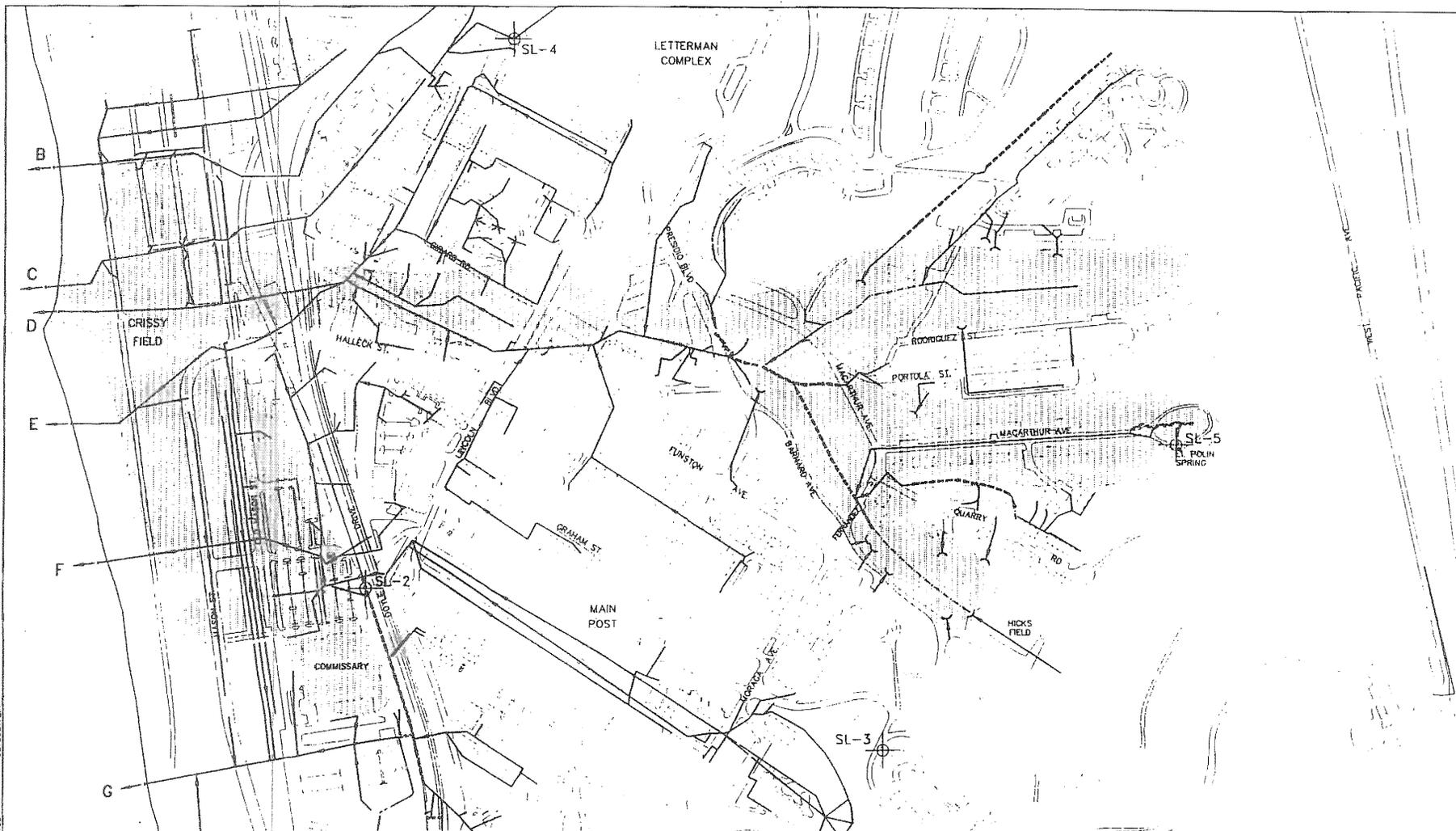
Comprehensive evaluations of hydrology for the entire Presidio were recently conducted for purposes of planning stormwater facility upgrade and wetland restoration activities (Dames & Moore 1994, 1995a). Figure 3-6 shows the natural drainage patterns and storm drainage system. The Crissy Field area of San Francisco Bay annually receives approximately 22 inches of precipitation, primarily in December through March. The soils are very permeable and runoff is very low, except under conditions of intense rainfall or long, sustained storms. The majority of surface water flows from the Presidio drain to Crissy Field and then drain to the bay in underground stormwater pipes at six outfall locations along the shoreline. Tennessee Hollow is the largest stream draining to the Crissy Field area and the only year-round stream. The hydrologic analysis found that most of the stormwater pipes in the Crissy Field area are undersized for conveying a 10-

year storm event. Inadequately sized pipes could lead to localized flooding from stormflows larger than 10-year events. The mean low-low tide in the vicinity of Crissy Field is -3.1 feet mean sea level (msl) and the difference between the low and high tides is an average of 5.8 feet and can exceed 8.5 feet.

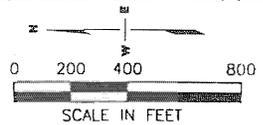
3.5.1.2 Groundwater Hydrology

Domestic water supplies for the Crissy Field area have historically been supplied by the Presidio water supply system. Groundwater supplies have been more important in other areas of the Presidio; these supplies include the El Polin Spring, which is the source of most streamflow in Tennessee Hollow. The groundwater aquifers at Crissy Field have been studied in the past to assist with hazardous waste remediation studies and wetland restoration feasibility studies (Dames & Moore 1995a and 1995b, Watkins-Johnson Environmental et al. 1993, Stetson Engineers 1986). Shallow groundwater is located in well-sorted and unconsolidated sediment interspersed with occasional layers of silts and bay muds (Colma formation) that are generally less than 100 feet thick. The Colma formation is overlain with dune sand deposits and overlies the deeper bedrock materials (Franciscan formation) (Figure 3-5). Areas of historical wetlands that were filled generally consist of sandy soils with minor amounts of construction debris (Watkins-Johnson Environmental et al. 1993).

Water-level measurements have been taken at Crissy Field for a variety of studies over the years (Philip Williams & Associates 1989 and Dames & Moore 1995a). The studies indicate that groundwater is generally found at 4 to 5 feet below ground surface (bgs) or at 4 to 6 feet mean lower low seawater level (MLLW). The surficial deposits and Colma formation exhibit relatively high hydraulic conductivity (50 feet/day); however, the small hydraulic gradient (0.004 foot/foot) present at Crissy Field indicates that flow within the aquifer is low. Flow is generally in a northerly direction toward the bay. Tidal fluctuations can influence groundwater levels up to 2,000 feet from the shoreline, with variations of approximately 1.0-1.5 feet near the shoreline and decreasing inland to less than 0.05 foot at a distance of 500 feet from the shoreline.



- LEGEND:**
- STORM SEWER PIPE
 - CONCRETE OR BRICK LINED OPEN CHANNEL
 - DRAINAGE DITCH
 - B OUTFALL LETTER
 - RESTORATION AREAS
 - STORMWATER QUALITY SAMPLE POINT (SEE SECTION 4.5.1)



Source: Dames & Moore 1995a.

Figure 3-6
Existing Stormwater System at Tennessee Hollow and Crissy Field

3.5.2 Wetlands

Historically, a marsh existed behind a strip of beach and dunes that bordered the bay. Currently, no wetlands exist at Crissy Field. However, based on the results of recently conducted feasibility studies, the site is proposed for restoration of a coastal tidal wetland similar to the wetland that existed there historically (Dames & Moore 1995a and Philip Williams & Associates 1996a). The feasibility studies evaluated various alternatives for wetlands restoration, including a freshwater backdune marsh and various sizes of a tidal marsh. The studies concluded that restoration of a tidally influenced marsh would be more feasible than restoration of a freshwater wetland. The historical wetlands at Crissy Field measured approximately 130 acres and were aligned generally parallel to the shoreline (Dames & Moore 1995a) (Figure 3-3). The hydraulic nature of the historical wetlands with respect to surface and groundwater interactions, tidal exchange, and water quality can only be estimated using our present-day knowledge of coastal wetlands and lagoons. Historical evidence indicates that the wetlands provided locally important habitat for aquatic organisms and terrestrial wildlife. The hydraulic forces that created the backdune marsh system were probably unique relative to the predominance of broad coastal mudflat marshes found at other areas in San Francisco Bay. Characteristics of the site would have favored a hydraulic system that alternated between saline and freshwater conditions according to the location of dune-forming processes, tidal exchange, and freshwater inputs from streams draining the Presidio. The natural landscape of Crissy Field was significantly altered during construction activities in 1914 associated with development of the 1915's Panama-Pacific International Exposition grounds. The salt marsh, which may have graded gradually into a fresh marsh, was filled with materials dredged from the bay (Dames & Moore 1995a, Philip Williams & Associates 1996a and 1996b).

3.5.3 Water Quality

3.5.3.1 Regulatory Framework for Water Quality

The San Francisco RWQCB is the state agency with primary responsibility and authority for ensuring that the beneficial uses of water resources are

protected from potential adverse impacts of development at Crissy Field. Water quality objectives and numerical water quality standards are established in the RWQCB water quality control plan (basin plan) to protect the established beneficial uses of the water bodies (California Regional Water Quality Control Board 1995). The beneficial uses for groundwater and surface water at Crissy Field are identified in the Basin Plan and are applied by the RWQCB on a case-by-case basis. Important beneficial uses designated for the bay include contact and noncontact recreation, commercial sport fishing, and shellfish harvesting. Additionally, the State of California can regulate water quality through the Water Quality Control Plan for Inland Surface Waters (ISWP) and the Enclosed Bays and Estuaries Plan (EBEP), which established numerical objectives for "priority pollutants" such as trace metals and synthetic organic compounds discharged to inland waters and estuarine environments, respectively. However, the ISWP and EBEP were the subject of a lawsuit in 1994 and eventually were overturned. The plans are currently under review and are being prepared for readoption in the near future, and Crissy Field activities will most likely be subject to the provisions of these new plans. The cleanup of contaminated groundwater at Crissy Field to acceptable levels is being conducted by the Army and is regulated by the California Department of Toxic Substances Control (DTSC) and the RWQCB (refer to Section 3.10, "Hazardous Substances and Environmental Remediation").

The RWQCB is also the primary agency for granting, administering, and enforcing a variety of waste discharge permits, including National Pollutant Discharge Elimination System (NPDES) permits. Construction projects that disturb an area greater than 5 acres require an NPDES permit for general construction activity. The permit requires development, implementation, and compliance monitoring of a stormwater pollution prevention plan (SWPPP) that prescribes best management practices (BMPs) to control erosion and contaminated runoff from the construction site.

Construction activities required for the tidal marsh creation and other shoreline modifications would be subject to federal regulation under Section 404 of the Clean Water Act. The U.S. Army Corps of Engineers requires evaluation of water quality considerations associated with modification of the bay shoreline. A Section 401 certification waiver from the San Francisco RWQCB would also be required for the Section 404 permit to be obtained.

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3.5.3.2 Surface Water Quality

Surface water quality at Crissy Field depends primarily on mineral composition of the soils and associated parent materials within the watersheds that drain onto the site, hydrologic characteristics, and sources of contaminants in the watershed. The quality of surface water runoff is important primarily as it affects marine organisms and habitat near the outfalls along the bay shoreline and, to a smaller extent, the freshwater organisms and terrestrial wildlife that may use the fresh water before it enters the bay. Water quality is also a concern because of runoff of urban pollutants such as oils and grease, heavy metals, and pesticides that could enter the wetland restoration area from the Tennessee Hollow watershed and from other areas along the southern boundary of the Crissy Field site plan area.

Very little current data exist for surface water quality at the Presidio or Crissy Field. A sample was collected in November 1990 from El Polin Spring, a major tributary to the Tennessee Hollow drainage basin (Watkins-Johnson Environmental et al. 1993). The results indicate that surface water has a high mineral content dominated by magnesium carbonate. The common ions sodium, chloride, fluoride, and nitrate were within the maximum contaminant levels (MCLs) for state drinking water quality standards. Chromium and mercury were within drinking water MCLs but were slightly elevated with respect to EPA ambient water quality criteria for protection of freshwater life (U.S. Environmental Protection Agency 1986). No organic compounds were detected.

Water quality historically has been a concern with respect to elevated levels of coliform bacteria detected in water samples collected at nearshore areas of the bay (Dames & Moore 1994). To address this issue, improvements were made in 1994 to eliminate cross connections between the stormwater and sewer systems. The San Francisco Department of Public Works, Bureau of Water Pollution Control, has since continued monitoring and year-round sampling of total coliforms at the Crissy Field monitoring stations. Although there have been occasional high counts detected, in 1996 the recreational water contact standard was not exceeded at the Crissy Field stations. Beaches are posted when bayshore waters are not suitable for recreation contact (Navarret pers. comm.).

Surface stormwater quality data were collected in 1994 from four different land use categories (roads, residential, commercial, and open space) for the stormwater system improvement studies (Dames & Moore 1994). The results were compared with water quality objectives (WQOs) established by the RWQCB (California Regional Water Quality Control Board 1995) and EPA ambient water quality criteria (AWQC). Although no regulatory thresholds apply to stormwater or groundwater discharges to surface waters, the objectives and criteria may be applied to the regulation of the quality of surface receiving waters, such as the bay, Tennessee Hollow Creek, and the proposed marsh. The objectives and criteria provide a framework to evaluate whether chemical compounds may have an adverse effect on a proposed project and determine the type and level of protective measures required to prevent pollution from occurring. In general, constituents for which WQOs and AWQC have been established include various inorganic ions, metals, and pesticides. WQOs and AWQC have not been established for most other organic and inorganic compounds.

Individual and multiple sample composites were collected during three storms from areas in four land use categories at the Presidio during the 1994 sampling program. Five of the six sites where samples were collected drain through the buried stormwater outfall system through Crissy Field to the bay. Fecal coliform bacteria counts were within the range expected from typical urban storm event runoff. The large majority of individual and composite samples analyzed for metals were less than the detection limits. In the open space land use category, nickel and chromium concentrations were higher than the AWQC in two of the three individual samples. The AWQC for zinc was exceeded in the composite of road samples and in four of the six samples from residential and commercial areas. One of the three individual residential area samples had a level of mercury above the AWQC. Corrective measures that were identified in the stormwater management plan will be implemented to improve the quality of stormwater collected and discharged through the outfall system to the bay. Monitoring will be used to ensure that appropriate measures are in place to control the range of pollutants expected to be generated from stormwater under various land use scenarios (Dames & Moore 1994).

3.5.3.3 Groundwater Quality

Groundwater quality of shallow aquifers, similar to surface water quality, is determined to a large extent by the nature of geologic materials and processes present in the water-bearing strata and by the types and quantities of pollutants transported in freshwater recharge. In coastal shoreline areas, saltwater intrusion to freshwater aquifers can occur and depends on the natural extent of tidal influence, as well as groundwater withdrawals that may artificially induce intrusion. Salinity of shallow groundwater at Crissy Field generally is lower than that of seawater and is consistent with hydrologic studies that suggest the tidal influence is limited to the nearshore zone.

Dames & Moore (1995a) found that chloride concentrations in four sampled wells on Crissy Field were within drinking water standards. Results from studies conducted for hazardous waste investigations also found chloride concentrations in 10 wells to be within standards (Watkins-Johnson Environmental et al. 1993). Groundwater in the area, however, is not currently used for drinking water supplies and is not likely to provide a source of supply in the future.

Groundwater quality in localized areas of Crissy Field has been degraded in the past by the filling of wetlands with materials containing waste construction debris and migration of hazardous substances to the shallow aquifer. Concerns regarding groundwater quality at Crissy Field are primarily related to potential impacts on the marine organisms exposed to offshore discharge from the shallow aquifer. In general, the presence of organic compounds, such as pesticides and petroleum products, and heavy metals can pose an ecological risk to aquatic ecosystems. The level of risk depends on the concentration and exposure routes.

Data on groundwater quality for Crissy Field are limited to studies conducted for the Army's hazardous substances investigations (see Section 3.10, "Hazardous Substances and Environmental Remediation"). Groundwater data that were collected for the initial remedial investigation (RI) in 1993 (Watkins-Johnson Environmental et al. 1993) were reviewed for the wetland restoration planning studies (Dames & Moore 1995a).

The revised RI (Dames & Moore 1995b) provides the latest analysis of groundwater data for the Crissy Field area. An area of groundwater

contamination exists near the old petroleum, oil, and lubricants area from activities that occurred near Building 637. The plume of contaminants includes total petroleum hydrocarbon (TPH), volatile organic compounds (VOCs), and smaller contributions of metals and other organic compounds. An interim groundwater treatment unit was installed at the site in September 1994. Long-term remediation plans are being developed. Several wells in the area known as Fill Site 7, an area of mostly construction debris, have exhibited high levels of cadmium, chromium, copper, lead, nickel, silver, and zinc. Building 937, which was part of the Army's vehicle maintenance area, has localized groundwater contamination from VOCs, TPH, and several metals. The Army has already initiated interim remedial actions; a groundwater treatment system was installed in August 1994. The Army's ongoing and planned remedial actions include removal of contaminated soil and sources of groundwater contamination, followed by groundwater treatment where necessary. The cleanup will further reduce water quality degradation that has occurred and the potential risks from areas of historical contamination.

3.6 Biological Resources

3.6.1 Presettlement Habitats and Historical Changes

In 1816, the naturalists Johann Eschscholtz and Adelbert Chamisso landed at Crissy Field on the Russian ship *Rurik* and type-classified more than a dozen common California native plants. At that time, a marsh existed behind a strip of active coastal dunes and northern foredune habitat that bordered the bay. Historical vegetation surrounding the marsh likely consisted of coastal scrub and coastal prairie species. A freshwater pond and freshwater marsh were at the west end of Crissy Field and were likely surrounded by northern dune scrub habitat.

As noted in Section 3.4.1, the natural landscape of Crissy Field was significantly altered during construction activities in 1914, when the salt marsh was filled with dredged materials from the bay.

3.6.2 Existing Biological Habitats and Resources

Bordering San Francisco Bay, Crissy Field is located in the Central Coast subregion of the California Floristic Province (Hickman 1993). This subregion extends along the coast from Bodega Bay to Point Conception and supports an array of habitats dependent on or adapted to coastal influences such as summer fog, maritime temperatures, salt spray, and strong winds.

The Crissy Field site plan area is characterized by five habitats: northern foredune, disturbed northern foredune, active coastal dunes, non-native grassland, and developed and landscaped areas. The locations of these habitats are shown in Figure 3-7 and are described below. Because of the intensive use of Crissy Field by humans, the overall wildlife value and use of the site is low compared with that of similar sites with less human activity. Unleashed dogs and feral cats also reduce the wildlife use of the site. Twenty-two unleashed dogs were observed in a 2-hour period during a site

reconnaissance survey. The Crissy Field area is low-quality area for feral cats because it is open with no vegetation for cover, and no cat feeding stations were observed. Feral cats could be present irregularly or in low numbers at Crissy Field.

The acreage occupied by each habitat type in the site plan area is presented in Table 3-2.

Table 3-2. Acreages Occupied by Plant and Wildlife Habitats in the Crissy Field Site Plan Area

Habitat	Size (acres)
Northern foredune (undisturbed)	2.6
Disturbed northern foredune and active coastal dunes/beach	16.9
Non-native grassland	18.1
Developed and landscaped areas	62.4
Total	100.0

On July 10 and July 15, 1995, a Jones & Stokes Associates botanist and wildlife biologist conducted reconnaissance-level site surveys of the Crissy Field proposed site plan area to identify plant communities and wildlife habitats and assess the potential for special-status species to be found there. The information provided in this section is based on the field surveys, a review of existing information about the site plan area, pertinent literature, and contacts with knowledgeable individuals.

The existing vegetation and wildlife resources within each habitat type at Crissy Field, including the potential for presence of special-status species, are described below.

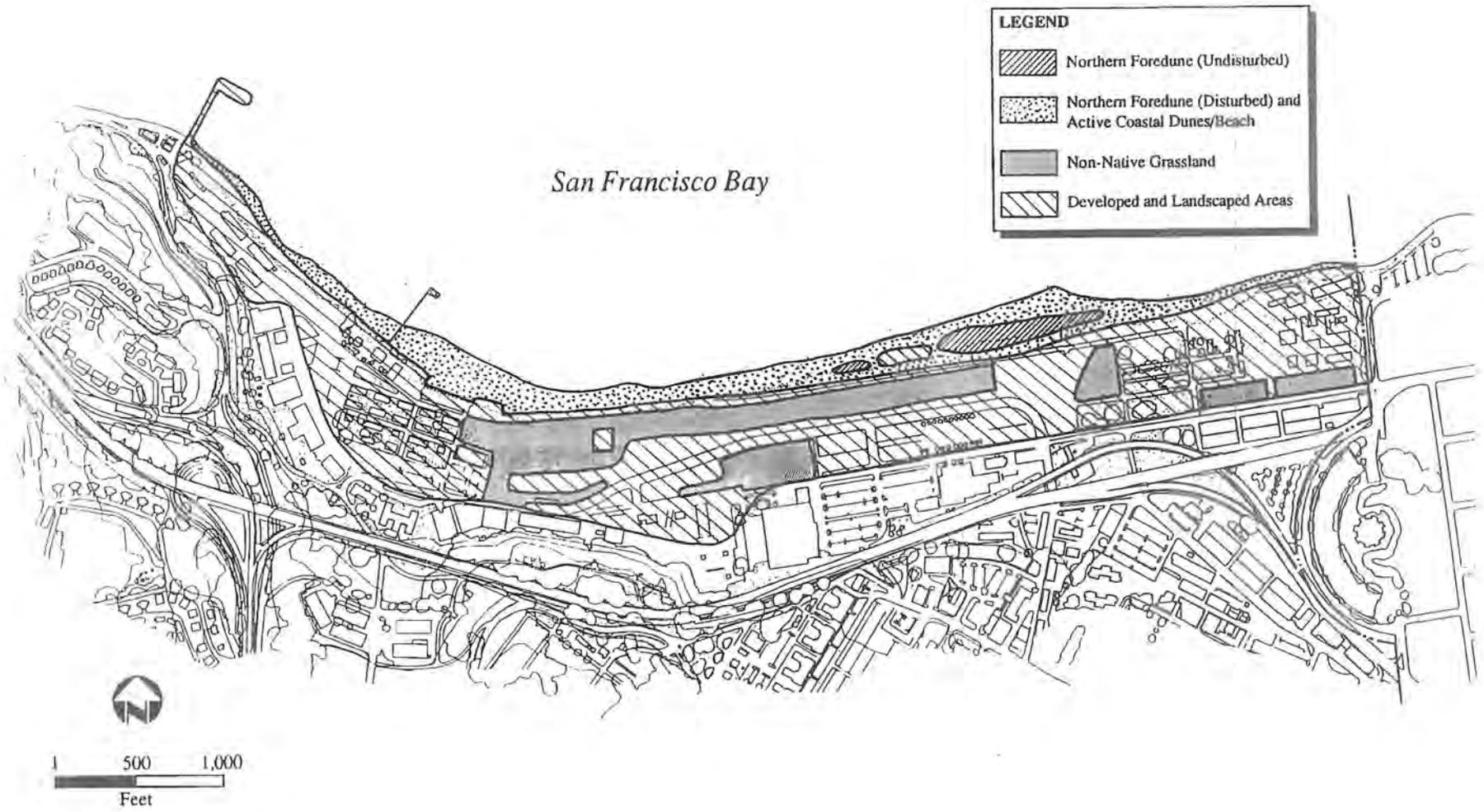


Figure 3-7
Habitat Types at Crissy Field

3.6.2.1 Northern Foredune (Undisturbed)

Undisturbed native northern foredune habitat exists in areas of beach that have been fenced to provide protection. These areas are part of a restoration project intended to restore the native vegetation that once was common along San Francisco Bay. Many volunteers take part in restoration activities in this area. Typical native dune plant species in these areas include beach bur (*Ambrosia chamissonis*), sand verbena (*Abronia umbellata*), and beach primrose (*Camissonia cheiranthifolia*). Northern foredune is considered a special native biological community because of its limited distribution and declining status relative to historical conditions and because it provides important habitat to dependent plant species.

The native foredunes have low wildlife value and wildlife use because the existing restoration area is relatively small, the native foredunes are isolated from other native habitats, and there is intense human activity in this habitat. Common wildlife species such as mourning doves (*Zenaida macroura*), rock doves (*Columba livia*), house finches (*Carpodacus mexicanus*), and house sparrows (*Passer domesticus*) were observed during the field survey in this community.

3.6.2.2 Disturbed Northern Foredune

Disturbed northern foredune is a stabilized dune community that has undergone frequent disturbance from activities that were historically associated with the airfield and from ongoing disturbances associated with recreational activities. Common plant species found in disturbed dune include sea rocket (*Cakile maritima*), wild radish (*Raphanus sativus*), and ice plant (*Carpobrotus edulis*). Disturbed northern foredune is a common coastal community regionally and statewide.

The disturbed northern foredune is considered to have low wildlife value and low wildlife use because the site consists of non-native vegetation and the area is disturbed by human activity. Wildlife use is similar to that of the undisturbed northern foredunes.

3.6.2.3 Active Coastal Dunes and Tidal Zone

Active coastal dunes characterized by unvegetated sand with patches of native dune and disturbed dune vegetation form a linear strip along the northern perimeter of Crissy Field adjacent to the bay. Vegetation is sparse or lacking because of frequent moving of substrates by wind and because of frequent disturbance from concentrated human and dog activity. Active coastal dunes are a common natural community throughout coastal California.

Because of the intensive human use (e.g., jogging and dog walking) along the beach and the presence of unleashed dogs, the beach is used mostly by human-tolerant and dog-tolerant wildlife species, such as killdeer (*Charadrius vociferus*), ring-billed gull (*Larus delawarensis*), western gull (*Larus occidentalis*), Heermann's gull (*Larus heermanni*), Caspian tern (*Sterna caspia*), mourning dove, and rock dove. Less human-tolerant birds may use the beach late in the evenings, early mornings, and during winter, when human activity is less intensive. These species include semipalmated plover (*Charadrius semipalmatus*), western snowy plover (*Charadrius alexandrinus nivosus*), western sandpiper (*Calidris mauri*), dunlin (*Calidris alpina*), least sandpiper (*Calidris minutilla*), and sanderling (*Calidris alba*).

Many animals also forage or rest in the bay adjacent to Crissy Field. These species include common loon (*Gavia immer*), western grebe (*Aechmophorus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), brown pelican (*Pelecanus occidentalis*), greater scaup (*Aythya marila*), white-winged scoter (*Melanitta fusca*), red-breasted merganser (*Mergus serrator*), and harbor seal (*Phoca vitulina*). In addition, the rock rubble and the sandy beach in the intertidal zone support many marine invertebrates, including moon snails, dungeness crabs, starfish, clams, and barnacles. No herring (*Clupea harengus*) spawning grounds are known in the Crissy Field area (Waters pers. comm.).

3.6.2.4 Non-Native Grassland

Non-native grassland at Crissy Field occupies areas that historically have been heavily disturbed. This habitat is dominated by non-native annual grasses such as wild oat (*Avena fatua*) and hare barley (*Hordeum murinum*).

ssp. *leporinum*) and associated forbs such as cutleaf plantain (*Plantago coronopus*) and common sow thistle (*Sonchus oleraceus*). This habitat type is a common community both regionally and throughout the state.

The wildlife value and wildlife use of the non-native grassland area is low because of the intensive recreational use of the area. The area is used by common wildlife species such as western gulls, mourning doves, rock doves, Brewer's blackbirds (*Euphagus cyanocephalus*), house finches, and house sparrows.

3.6.2.5 Developed and Landscaped Areas

Developed and landscaped areas consist of paved roads and parking lots, buildings and houses, portions of the old airfield, landscaped areas surrounding structures, and ornamental plantings throughout the airfield. Twenty Monterey pines and ten cypress trees grow in the eastern part of Crissy Field and have a grassy understory. These trees also grow as a stand providing shade for a picnic area in the middle of the beach and are found around some structures in the western part of the site plan area. A row of eucalyptus trees stands along the east boundary. Forty-eight palm trees also grow along the airstrip. This type of habitat is common both locally and throughout the state.

The wildlife value and wildlife use of the developed and landscaped areas is similar to that of the annual grassland areas, except bushtit (*Psaltriparus minimus*), American robin (*Turdus migratorius*), pine siskin (*Carduelis pinus*), purple finch (*Carpodacus purpureus*), and tree swallow (*Tachycineta bicolor*) have also been observed (Conner pers. comm.).

The greater western mastiff bat (*Eumops perotis californicus*), long-eared myotis (*Myotis evotis*), fringed myotis (*Myotis thysanodes*), Yuma myotis (*Myotis yumanensis*), and Pacific western big-eared bat (*Plecotus townsendii townsendii*) roost in trees, caves, or unoccupied human structures. No bat roosts were observed at Crissy Field during bat surveys for the Presidio or during the 1995 field survey, but bats could forage at Crissy Field.

3.6.3 Special-Status Species

Special-status species are plants and animals that are legally protected under the state and federal Endangered Species Acts (ESAs) or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such status.

USFWS and the National Marine Fisheries Service identified species that are federally listed as endangered or threatened or federal candidate species with distributions that might include the Crissy Field area. See Section 5.0, "Consultation and Coordination", for the list of special-status species from USFWS with potential to occur in the City/County of San Francisco.

3.6.3.1 Special-Status Plant Species

Special-status plants are species in the following categories:

- plants listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants] and various notices in the Federal Register [proposed species]);
- plants that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 40:7596-7613, February 28, 1996);
- plants listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5);
- plants listed under the California Native Plant Protection Act (Cal. Fish and Game Code, Section 1900 et seq.);
- plants that meet the definitions of rare or endangered under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);
- plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2 in Skinner and Pavlik 1994); and

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- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution (Lists 3 and 4 in Skinner and Pavlik 1994), which may be included as special-status species on the basis of local significance or recent biological information.

No special-status plant species are known to occur at Crissy Field (Jones & Stokes Associates 1990). No special-status plants were observed during the reconnaissance-level field visit. The following paragraph discusses each of the special-status plants included in the USFWS list.

Five special-status plants are considered to have potential to occur on the project site, based on occurrence in the region and association with habitat types found at Crissy Field (Natural Diversity Data Base 1995, Skinner and Pavlik 1994). These species are San Francisco wallflower (*Erysimum franciscanum*), San Francisco campion (*Silene verecunda* ssp. *verecunda*), beach layia (*Layia carnosa*), and San Francisco lessingia (*Lessingia germanorum*). However, suitable microhabitat conditions specific to each of these species do not exist because of long-term disturbances associated with the site. Marsh sandwort (*Arenaria paludicola*), a federally listed and state-listed endangered species, may have inhabited the marsh that existed at Crissy Field before the 1914 construction activities but because of filling in the wetland that previously existed, it does not occur on the site anymore. The USFWS list also includes Presidio manzanita (*Arctostaphylos hookeri* ssp. *ravenii*), Presidio clarkia (*Clarkia franciscana*), and Marin dwarf flax (*Hesperolinon congestum*) as special-status plant species potentially occurring in the vicinity. Habitat types that support these species; however, do not occur at Crissy Field and did not historically occur.

3.6.3.2 Special-Status Wildlife Species

Special-status animals are species in the following categories:

- animals listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.11 [listed animals] and various notices in the Federal Register [proposed species]);

- animals that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 40:7596-7613, February 28, 1996);
- animals that meet the definitions of rare or endangered under CEQA (State CEQA Guidelines, Section 15380);
- animals listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5);
- animal species of special concern to the California Department of Fish and Game (Remsen 1978 [birds] and Williams 1986 [mammals]); and
- animals fully protected in California (Cal. Fish and Game Code, Section 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).

The following section discusses special-status wildlife species that could occur in the vicinity of the project site according to the USFWS list. No special-status wildlife species are known to breed at or use Crissy Field extensively, although the coastal population of the western snowy plover (federally listed as threatened) is an uncommon visitor on the beach. During the 1995/1996 NPS survey, no snowy plovers were observed on Crissy Field beaches (Hatch pers. comm.). There is a museum specimen of a salt marsh vagrant shrew (*Sorex vagrans halicoetes*) (California species of special concern), which was probably found historically in the salt marsh at Crissy Field. Because no suitable salt marsh habitat exists at Crissy Field, the salt marsh vagrant shrew no longer is present. Brown pelicans (state-listed and federally listed as endangered) are often seen offshore in the bay, but they do not use Crissy Field.

The salt marsh harvest mouse (*Reithrodontomys raviventris*) (listed as endangered under the California and federal ESAs), California clapper rail (*Rallus longirostris obsoletus*) (endangered under the California and federal ESAs), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*) (California species of special concern), and black rail (*Laterallus jamaicensis*) (listed as threatened under the California ESA) occur in salt marsh habitats. Because suitable salt marsh habitat no longer exists at Crissy

Field, these species do not occur there. None were observed during the field survey.

American peregrine falcons (*Falco peregrinus anatum*) (endangered under the California and federal ESAs) and bald eagles (*Haliaeetus leucocephalus*) (endangered under the California ESA and threatened under the federal ESA) are seen occasionally flying over the bay, but Crissy Field has no peregrine falcon or bald eagle nesting sites and has low-quality foraging habitats. Neither of these species were observed during the field survey.

The mission blue butterfly (*Icaricia icariodes missionensis*) (endangered under the federal ESA) occurs in the hills of the San Francisco peninsula, and San Bruno elfin butterfly (*Incisalia mossii bayensis*) (endangered under the federal ESA) occurs in the San Bruno Mountains only. No suitable habitat for these butterflies exists at Crissy Field.

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*) (California species of special concern), Bell's sage sparrow (*Amphispiza belli belli*) (California species of special concern), and California horned lizard (*Phrynosoma coronatum frontale*) (California species of special concern) occur in coastal scrub habitats. No coastal scrub habitats exist at Crissy Field, and none of these species were observed during the field surveys.

The California red-legged frog (*Rana aurora draytoni*) (threatened under the federal ESA), northwestern pond turtle (*Clemmys marmorata marmorata*) (California species of special concern), southwestern pond turtle (*Clemmys marmorata pallida*) (California species of special concern), foothill yellow-legged frog (*Rana boylei*) (California species of special concern), California tiger salamander (*Ambystoma californiense*) (candidate for listing under the federal ESA), tricolored blackbird (*Agelaius tricolor*) (California species of special concern), and willow flycatcher (*Empidonax traillii brewsteri*) (endangered under the California ESA) occur in freshwater creeks, riparian habitats, or ponds. No suitable habitat exists at Crissy Field for these species. None of these species were observed during field surveys.

3.6.3.3 Special-Status Fishery Resources

Special-status fish are species that are legally protected under the state and federal ESAs or other regulations, and species that are considered sufficiently

rare by the scientific community to qualify for such listing. Special-status fishery resources are species in the following categories:

- fish listed or proposed for listing as threatened or endangered under the federal ESA and various notices in the Federal Register (proposed species),
- fish that are candidates for possible future listing as threatened or endangered under the federal ESA (61 FR 40:7596-7613, February 28, 1996),
- animals listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5), and
- California species of special concern.

Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*) (threatened under the federal ESA and endangered under the California ESA) and steelhead (*Oncorhynchus mykiss gairdnerii*) (California species of special concern) occur in San Francisco Bay and could visit the shoreline along Crissy Field. San Francisco Bay is also within critical habitat for winter-run chinook salmon.

Coho salmon (*Oncorhynchus kisutch*) (California species of special concern), delta smelt (*Hypomesus transpacificus*) (threatened under the federal and California ESAs), and Sacramento splittail (*Pogonichthys macrolepidotus*) (proposed for listing as threatened under the federal ESA) do not occur in this portion of San Francisco Bay.

3.7 Transportation

3.7.1 Crissy Field Roadway System

Regional access to Crissy Field is provided by U.S. 101 and U.S. Highway 1. These routes cross the Golden Gate Bridge at the northwest corner of the Presidio, pass through the park, and continue south and east through San Francisco. Although both routes connect with most intersecting streets in the city, their only direct connection with Crissy Field is at the Golden Gate Bridge viewing area near the Golden Gate Bridge. Access to U.S. 101, also called Doyle Drive in the vicinity of Crissy Field, is also available immediately outside the Presidio near the Mason Street, Gorgas Avenue, and Lombard Street gateways. Access to U.S. Highway 1 is available south of the Presidio. Inside the Presidio boundary, U.S. 101 currently carries 89,000 to 116,000 vehicles per day, and U.S. Highway 1 carries 67,000 vehicles per day (California Department of Transportation 1994).

Mason and Old Mason Streets provide east-west access through the Crissy Field area. Mason Street has one of the nine gateways that serve as entrances to the Presidio. Each gateway operates in tandem with the others to allow traffic into the Presidio (National Park Service 1994b). As described below under "Current Traffic Conditions", a little more than 8% of the traffic entering the Presidio typically passes through the Mason Street entrance gateway. Mason Street is also the primary access to the commissary and PX. It is also a historic road corridor that served as the link between the city and Fort Point, and it is still an important roadway connecting a variety of land use areas along the waterfront.

Mason Street averages 51 feet in width with two 20-foot-wide travel lanes on an 11-foot shoulder. This road has no sidewalks or striped bicycle lanes. This road connects with Marina Boulevard and Doyle Drive at the Mason Street gateway. At their western terminus, Mason and Old Mason Streets indirectly connect with Lincoln Boulevard by way of Crissy Field Avenue, McDowell Avenue, and Cowles Street. Lincoln Boulevard has access to/from U.S. 101 and U.S. Highway 1 at the Golden Gate Bridge viewing area near the Golden Gate Bridge. All intersections within Crissy Field are unsignalized and have sufficient capacity for existing traffic loads (National Park Service 1994d).

3.7.2 Current Traffic Conditions

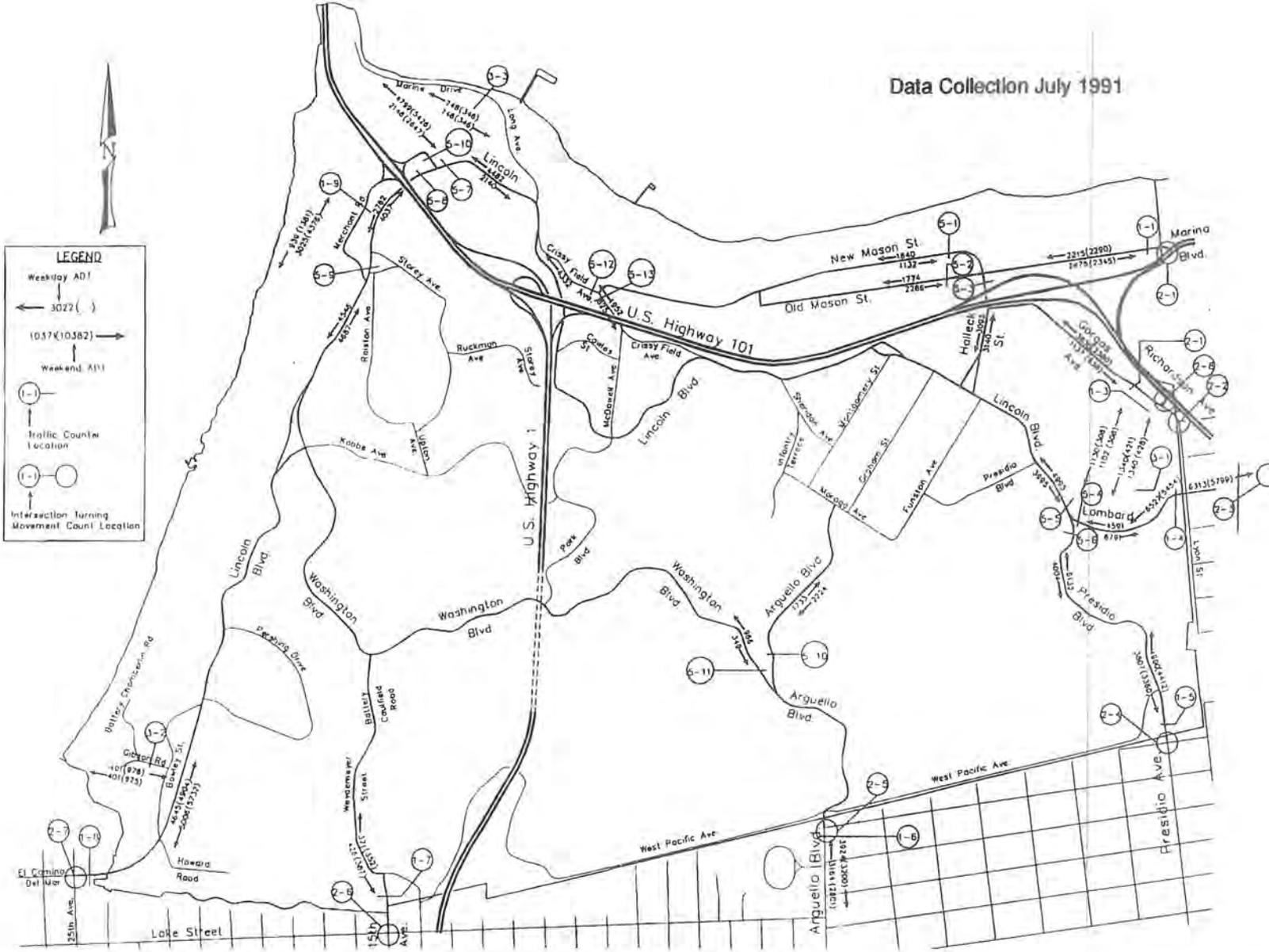
Traffic at the Presidio and Crissy Field includes a mix of commuter trips, recreation and other non-work-related trips, and through trips.

NPS operates a permanent traffic counter at the entrance to Fort Point, a National Historic Landmark located at the far west end of Crissy Field, which generates a large volume of tourism-related traffic within the boundaries of the Presidio. Data from this machine indicate that attendance peaks in or around July of each year. Figure 3-8 shows the most recent (July 1991) weekday and weekend average daily traffic (ADT) volumes for the Crissy Field and other Presidio roadways. These traffic counts provide a general indication of the number of vehicles traveling on each of the major roadways in and around Crissy Field on the average weekday and the average weekend of the expected month of peak visitation.

The 1991 traffic counts indicated that 57,996 vehicles crossed the Presidio gateways on an average weekday in July. About 8.1% of this traffic used the Mason Street gateway, and 18.8% used the entrances at the Golden Gate Bridge viewing area. On an average July weekend, the counts indicated that 56,063 vehicles crossed Presidio gateways. About 8.3% of this traffic used the Mason Street gateway, and 24.7% used the entrances at the Golden Gate Bridge viewing area.

Onsite observations and collected ADTs and peak-hour volumes indicate that several of the major roadways within the Presidio are used as commuter routes when U.S. 101 is congested. This results in higher ADT values, higher traffic demand during peak commuter travel periods, and more aggressive driving characteristics on these routes. Within Crissy Field, the traffic volumes on Crissy Field Avenue and Lincoln Boulevard indicate that these roads appear to carry traffic from Crissy Field, the main post, and possibly the Letterman Complex to westbound U.S. 101 at the Golden Gate Bridge viewing area. The Mason Street and Gorgas Avenue gateways also serve the traffic moving between the Presidio and U.S. 101. In addition, these routes are used by San Francisco traffic passing through the Presidio to get to the Golden Gate Bridge from east of the Presidio. These routes are less direct than U.S. 101, but they provide an alternate route for traffic when U.S. 101 is congested. Weekday daytime observations in June 1992

Data Collection July 1991



Source: National Park Service 1994c.

Figure 3-8
Weekend and Weekday Average Daily Traffic Volumes for Crissy Field Roadways

indicated that during normal-flow conditions on U.S. 101, westbound and eastbound cut-through traffic on the Crissy Field roadways was very light. Samples taken in mid- to late afternoon on a Saturday and Sunday in June 1992, however, showed significant westbound cut-through traffic on the Crissy Field roadways, amounting to 35% of the Saturday sample, and 65% of the Sunday sample. These data suggest that during the period of peak congestion westbound on U.S. 101, the Crissy Field bypass route is being used by a number of vehicles that is insignificant compared with U.S. 101 traffic volumes, but that is a significant portion of Crissy Field traffic. No notable eastbound cut-through traffic was observed along this route during these observation periods. (Robert Peccia & Associates 1995.)

3.7.3 Transit Service

The San Francisco Municipal Railway (MUNI) provides regular scheduled service within the Presidio. The main line serving Crissy Field is Line 29, which connects Crissy Field to southern, central, and western portions of San Francisco. This line provides weekday and weekend service from about 7:00 a.m. to 6:30 p.m. Lines 28 and 29 stop near the Golden Gate Bridge toll plaza.

MUNI service is most extensive around the Main Post and the eastern half of the post along the Lombard Street area. Transfers between lines are allowed without additional charge. Most MUNI buses and trolleys accommodate wheelchairs.

Golden Gate Transit provides regional bus and ferry service in and between San Francisco, Marin, and Sonoma Counties. Many of the bus routes pass through the Presidio, stopping at the Golden Gate Bridge viewing area near the toll plaza, allowing transfers to MUNI lines at this location. None of these routes stop within Crissy Field. None of Golden Gate Transit's ferry routes serve the Presidio.

In addition to MUNI and Golden Gate Transit, many private tour bus and charter bus companies carry visitors to and from Crissy Field and other Presidio attractions.

Event-sponsored shuttle services are often used to support special events at the Presidio and Fort Mason.

3.7.4 Bicycle and Pedestrian Traffic

Crissy Field is a popular location for trail walking, jogging, and bicycling. Much of this activity takes place on the Golden Gate Promenade (the Bay Trail). This popular route runs along the northern coast of Crissy Field, connecting San Francisco's Marina District and Fort Point. This trail varies in width from 6 feet to 30 feet and is surfaced with a combination of crushed stone, asphalt, and asphalt gravel. The trail is used by pedestrians and bicyclists.

Figure 1-2 shows the pedestrian trails and bicycle routes at Crissy Field and the rest of the Presidio.

Roadways within Crissy Field and the rest of the Presidio provide the only access for nonmotorized travel between San Francisco and the Golden Gate Bridge; therefore, the Crissy Field roadways are often used by through bicycle traffic, especially during commute hours. Crissy Field, however, does not have a continuous system of sidewalks and bicycle lanes on its streets. As a result, pedestrians and bicyclists are forced to mix with vehicles on the street system to move from one area to another.

3.7.5 Parking

Currently, marked and unmarked space accommodates parking for more than 3,400 vehicles in the areas under and north of Doyle Drive. The area north of Mason Street accounts for 1,755 of these spaces, primarily in unmarked paved and open space areas. Most day-to-day recreational parking demand is at the east end of the site, where marked and unmarked paved parking can accommodate as many as 490 cars. Additional parking occurs on dirt and grass in this area. This area serves a wide variety of recreational users, including boardsailors. Parking in this area is usually unorganized and vehicles are often spaced out to leave room for assembly of sailboard equipment. Counts done in 1995 show a peak of 460 cars parked in this location on a non-event day. Parking in other areas north of Mason Street is

accommodated on paved and unpaved open space, including the former airfield, space between Mason and New Mason Streets, and a small lot east of the U.S. Coast Guard station.

The GMPA calls for a total of 1,760 parking spaces in the entire 150-acre greater Crissy Field planning area (including 50 acres outside the current planning area and the Palace of Fine Arts area) by 2010.

Crissy Field provides shuttle staging parking for GGNRA events at Fort Mason Center and other park locations. Fort Mason Center event sponsors are currently required to obtain a use permit from the GGNRA Bay District to use Crissy Field whenever their attendance is expected to exceed 1,000 people. Shuttle bus service is provided by the sponsor during these events.

GGNRA permits use of Crissy Field for a variety of other events, such as organized runs and walk-a-thons, throughout the year. Attendance ranges from less than 100 to thousands of people, creating a wide range of parking demand for Crissy Field. In addition, large-scale events such as the San Francisco Blues Festival at Upper Fort Mason, and the San Francisco Marathon have generated demand for parking at Crissy Field.

A parking count performed in April 1995 for the Earth Day celebrations at the Presidio indicated that the Crissy Field parking usage reached a maximum of about 1,220 vehicles parked simultaneously. This event had over 5,000 participants.

The Presidio of San Francisco Transportation Demand Management Program Recommendations report includes a number of strategies for addressing special event parking issues, as well as a hierarchy of parking priorities and locations, strategies for implementing parking management at the Presidio, and funding sources for administering and implementing parking programs (Robert Peccia & Associates 1996).

3.8 Air Quality

This chapter describes the applicable air quality regulations and the existing regional air quality conditions in the project vicinity.

3.8.1 Air Quality Regulatory Framework

The federal Clean Air Act (42 USC 7401 et seq.) and the California Clean Air Act mandate the establishment of national and state ambient air quality standards. The acts establish maximum allowable increments beyond baseline concentrations of sulfur dioxide (SO_x), nitrogen dioxide (NO₂), and inhalable particulate matter (PM₁₀). Areas in which the standards are not met are known as nonattainment areas. The county of San Francisco has been designated a federal nonattainment area for ozone and carbon monoxide (CO) and a state nonattainment area for ozone, CO, and PM₁₀.

After the Presidio became a part of the GGNRA in September 1994, the Presidio's air quality designation changed from Class III to a Class II clean air area as defined by the federal Clean Air Act and amendments. Class II designation allows for smaller amounts of degradation of existing air quality within limits based on the standards compared to Class III. The Clean Air Act requires federal land managers to protect a park's air quality values from adverse impacts. Section 118 of the act requires that federal facilities comply with existing federal, state, and local air pollution control laws and regulations. GGNRA managers must ensure that all in-park activities meet existing laws and regulations and that external sources of air pollution are controlled to the extent possible to protect the air quality and resource values of the Presidio, including Crissy Field.

3.8.2 Air Quality Pollutants and Ambient Air Quality Standards

Both the State of California and the federal government have established ambient air quality standards for several different pollutants. For some

pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). The pollutants of greatest concern in San Francisco are CO, ozone, and PM₁₀. A summary of state and federal ambient air quality standards is shown in Table 3-3.

3.8.3 Existing Air Quality Conditions

Crissy Field's location allows for excellent air circulation because of the prevailing west and northwest winds. Because there are no pollution sources west of Crissy Field, the air moving into the area is of very high quality.

The primary source of air pollution at Crissy Field is motor vehicle traffic. When extreme traffic congestion coincides with stagnant air, localized CO levels may exceed state and federal standards. High traffic volumes and congestion occur regularly on U.S. Highway 1 and U.S. 101 near Crissy Field. Additionally, the surface streets near Crissy Field sometimes carry a substantial amount of traffic during the peak traffic hours when U.S. 101 is congested. However, violations of the CO standards at sensitive receptors at Crissy Field would not be expected because of the generally good air quality and the distance from congested roadways.

3.8.4 Air Quality Monitoring

The Bay Area Air Quality Management District (BAAQMD) operates a regional air quality monitoring network for the Bay Area Air Basin. The district has 29 sites in the greater Bay Area, including two in San Francisco. The closest monitoring data available are from the downtown San Francisco station, which is downwind of Crissy Field and is not representative of the expected superior air quality at the Presidio. NPS is not conducting any additional air quality monitoring within the GGNRA at this time. A summary of recent air quality monitoring data from the downtown San Francisco monitoring station is shown in Table 3-4. These data indicate that between 1991 and 1993, CO and ozone levels were within state and federal standards, while PM₁₀ levels have exceeded the state 24-hour standard 8%-25% of the time. Federal PM₁₀ standards were not exceeded during this period.

Table 3-3. Ambient Air Quality Standards Applicable in California

Pollutant	Symbol	Average Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O ₃	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
Carbon monoxide (Lake Tahoe only)	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
		8 hours	6	N/A	7,000	N/A	If exceeded	N/A
Nitrogen dioxide	NO ₂	Annual average 1 hour	N/A	0.053	N/A	100	N/A	If exceeded
			0.25	N/A	470	N/A	If exceeded	N/A
Sulfur dioxide	SO ₂	Annual average	N/A	0.03	N/A	80	N/A	If exceeded
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	N/A	655	N/A	N/A	N/A
Hydrogen sulfide	H ₂ S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A
Vinyl chloride	C ₂ H ₃ Cl	24 hours	0.010	N/A	26	N/A	If equaled or exceeded	N/A
Inhalable particulate matter	PM10	Annual geometric mean	N/A	N/A	30	N/A	If exceeded	N/A
		Annual arithmetic mean	N/A	N/A	N/A	50	N/A	If exceeded
		24 hours	N/A	N/A	50	150	N/A	If exceeded on more than 1 day per year
Sulfate particles	SO ₄	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	N/A	If exceeded no more than 1 day per year
		30 days	N/A	N/A	1.5	N/A	If equaled or exceeded	N/A

Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure.
 National standards shown are the primary (health effects) standards.
 N/A = not applicable.

Table 3-4. Summary of Carbon Monoxide, Ozone, and PM10 Monitoring Data

Pollutant	1991	1992	1993
Carbon Monoxide			
Highest 1-hour concentration (ppm)	9	8	7
Highest 8-hour concentration (ppm)	6.5	6.4	5.1
Hours above standard ^a	0	0	0
Days above standard ^b	0	0	0
Ozone			
1st high (ppm)	0.05	0.8	0.08
2nd high (ppm)	0.05	0.6	0.08
Days above standard ^c	0	0	0
PM10			
Highest 24-hour concentration ($\mu\text{g}/\text{m}^3$)	109	81	69
Geometric mean ($\mu\text{g}/\text{m}^3$)	29.7	27.6	25.1
Arithmetic mean ($\mu\text{g}/\text{m}^3$)	34.9	31.6	28.8
Percentage of days above standard ^d	25%	10%	8%
<p>Notes: Data are from the downtown San Francisco monitoring station. ppm = parts per million. $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.</p> <p>^a Hours above standard = number of hours during which the state 1-hour standard of 20 ppm was exceeded. ^b Days above standard = number of days on which the state and federal 8-hour standard of 9 ppm was exceeded. ^c Days above standard = number of days on which the state 1-hour standard of 0.09 ppm was exceeded. ^d Percentage of days above standard = number of days above the state 24-hour standard of $50 \mu\text{g}/\text{m}^3$ divided by the number of days sampled.</p>			
Source: California Air Resources Board 1994.			

3.9 Noise

3.9.1 Noise Regulatory Framework

Guidelines for assessing noise impacts of traffic have been established by the Federal Highway Administration. These standards, known as noise abatement criteria (NAC) and contained in 23 CFR 772, must be followed by an agency that is performing noise studies for actions involving federal-aid funds. The standards specify design noise levels and relate them to various land uses and/or activities. Land use category B of the NAC includes noise-sensitive receptors, such as outdoor recreation areas. The standard for this category is 72 decibels (dBA).

The GMPA EIS also commits NPS to comply with the San Francisco noise ordinance. The local ordinance stipulates that during construction, contractors and other equipment operators will comply with the San Francisco noise ordinance. The noise ordinance limits construction noise between 7 a.m. and 8 p.m. to 80 dBA at 100 feet and between 8 p.m. and 7 a.m. to 5 dBA above the ambient noise levels at the property.

3.9.2 Existing Noise Conditions

Most of the Presidio is generally quieter than the surrounding urban environment; however, there are more sources of noise at the north end of the Presidio, where Crissy Field is located. Managing ambient urban noise is difficult because of the unpredictability of the sources and the dispersal throughout the landscape. Elimination or significant reduction of noise not related to traffic might not be possible and is probably not expected by park users. A noise survey conducted in 1992 indicates that typical background noise levels at the Presidio range from about 50 dBA to 65 dBA. The higher levels were measured near U.S. Highway 1 (Park Presidio Boulevard) and U.S. 101. (Doyle Drive). (National Park Service 1993.)

The existing noise environment at Crissy Field is dominated by traffic noise on U.S. 101 and natural sources such as wind and waves. Background noise levels at Crissy Field are in the range of 55-60 dBA.

Aircraft were once a notable source of noise at the Crissy Field. The airfield was formerly used by aircraft, and the helipad is still used occasionally; currently, the helipad is used primarily for medical and military flights. The helipad was used 161 times during 1995. (Hornor pers. comm.)

3.9.3 Noise-Sensitive Areas

Noise-sensitive areas are land uses that are sensitive to environmental noise. Such land uses include residences, schools, libraries, hospitals, parks, and open space. Within and adjacent to the Crissy Field site plan area, noise-sensitive areas include only the park and open space for this project that currently exist and are planned for the future. The NPS residential use at the former Coast Guard Station is the closest residential use. Other residential land uses are located to the south of U.S. 101.

3.10 Hazardous Substances and Environmental Remediation

Crissy Field is the site of several ongoing cleanup programs for areas contaminated with hazardous waste products during the years of military activities. Contamination of soil and groundwater that could affect implementation of the proposed land uses, development of recreational facilities, and restoration of wetlands occurred in several areas at Crissy Field. The purpose of this section is to present a summary of hazardous waste sites and the status of environmental remediation efforts at Crissy Field in the proposed site plan area. Analysis of the remediation efforts is covered in separate environmental documentation. The primary sources of information used for this report are reports generated by Army consultants for hazardous substance cleanup activities at the Presidio (Argonne National Laboratory 1989, Watkins-Johnson Environmental et al. 1993, Watkins-Johnson Environmental 1994, Earth Technology Corporation 1995, Montgomery Watson 1995) and material provided by Army consultants (Dames & Moore 1995b and 1996) and NPS staff (Blank pers. comm.).

3.10.1 Regulatory Framework for Hazardous Substances

The U.S. Army is the lead agency conducting the investigation and cleanup of areas at the Presidio and Crissy Field contaminated by hazardous materials as a result of the long period of military operations. The Army is conducting investigation and remediation actions in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Base Realignment and Closure Act, the California Health and Safety Code, the California Water Code, and other relevant authorities. The California Department of Toxic Substances Control (DTSC) is the lead agency for oversight of the Army cleanup activities, and the San Francisco RWQCB works in conjunction with the DTSC on issues of water quality.

Preliminary cleanup efforts began in 1982 with an installation assessment that addressed past and present use of hazardous materials. An Enhanced Preliminary Assessment was prepared in 1989, providing more detail on hazardous waste conditions at the Presidio (Argonne National Laboratory 1989). A remedial investigation (RI) report provided detailed characterization of sites based on analyses of waste site samples and recommended remedial actions (Watkins-Johnson Environmental et al. 1993). Subsequent sampling to further characterize specific sites was conducted in 1994 and 1995; this includes sampling of stormwater outfalls to the bay for analysis of contaminated sediments. The results of sediment sampling in the bay were presented in an Ecological Sampling and Analysis Program (ESAP) report (Dames & Moore 1996).

A secondary revised draft final RI was completed in November 1995 (Dames & Moore 1995b). Results of the RI were used to support a draft final feasibility study (FS) that was released in January 1996 (Dames and Moore 1996). A remedial action plan (RAP) and record of decision (ROD) for the preferred alternative will be developed and approved. Remedial actions (RAs) of sites will then proceed. In some instances, interim remedial actions (IRAs) have been implemented to accelerate the cleanup.

In addition, the Army has an underground storage tank (UST) and fuel distribution system (FDS) program, which has its own reporting process. This includes removal or closure in place of USTs and the FDS and investigation of releases of petroleum products to soil and groundwater. A final Fuel Product Action-Level Development Report (FPALDR) released in October 1995 provides the framework to determine soil cleanup levels for petroleum contamination throughout the Presidio. A final Basewide CAP released in January 1996 evaluates appropriate cleanup methods for the UST/FDS sites. Individual CAPs will be developed to address site-specific cleanups where groundwater contamination occurs. In May 1996, the San Francisco Bay Regional Water Quality Control Board issued an order to the Army for cleanup of the petroleum-contaminated sites, which establishes the regulatory requirements and framework for the cleanup based on the FPALDR and Basewide CAP (San Francisco Regional Water Quality Control Board 1996).

Overall, once begun, the cleanup of CERCLA, UST, and FDS sites will occur over a 2- to 3-year construction period, followed by longer-term operation and maintenance for some sites.

3.10.2 Sites at Crissy Field

In its sampling programs, the Army has detected the presence of volatile and semivolatile organic compounds (VOCs and SVOCs), petroleum products (TPH), pesticides, metals, polychlorinated biphenyls (PCBs), and polycyclic aromatic hydrocarbons (PAHs) in various locations and concentrations at Crissy Field.

The sites at or near the Crissy Field site plan area include areas within the Directorate of Engineering and Housing (DEH) yard, Fill Site 7, the U.S. Coast Guard station, numerous USTs, a segment of the FDS, and several small arms firing ranges. The Building 637, 937, and 231 sites are not located within the site plan area but may contribute pollutants to the soils, groundwater, or Tennessee Hollow riparian corridor that could migrate to the plan area.

The CERCLA risk assessment performed by the Army as part of the RI report evaluated future land use scenarios planned by NPS and is taking these into account when determining which sites require cleanup. Sites at Crissy Field for which the Army intends to perform cleanup actions, based on the results of the risk assessment, as presented in the Army's FS, include the following (Figure 3-9):

- ppDDE and ppDDT in soil at Fill Site 7 in two locations;
- lead in soil at the Building 640/643 area, 923-931 area, 950/973/974 area, and Buildings 283 and 286 at the DEH yard;
- chlordane in soil at the Building 269/293 site in the DEH yard; and
- PAHs in soil at the Building 995/996 area at the Fort Point Coast Guard station site.

In the draft final FS, the Army proposes to remediate inorganics and organics in soil by confirmation sampling, excavation, disposal at an offsite landfill, and backfilling.

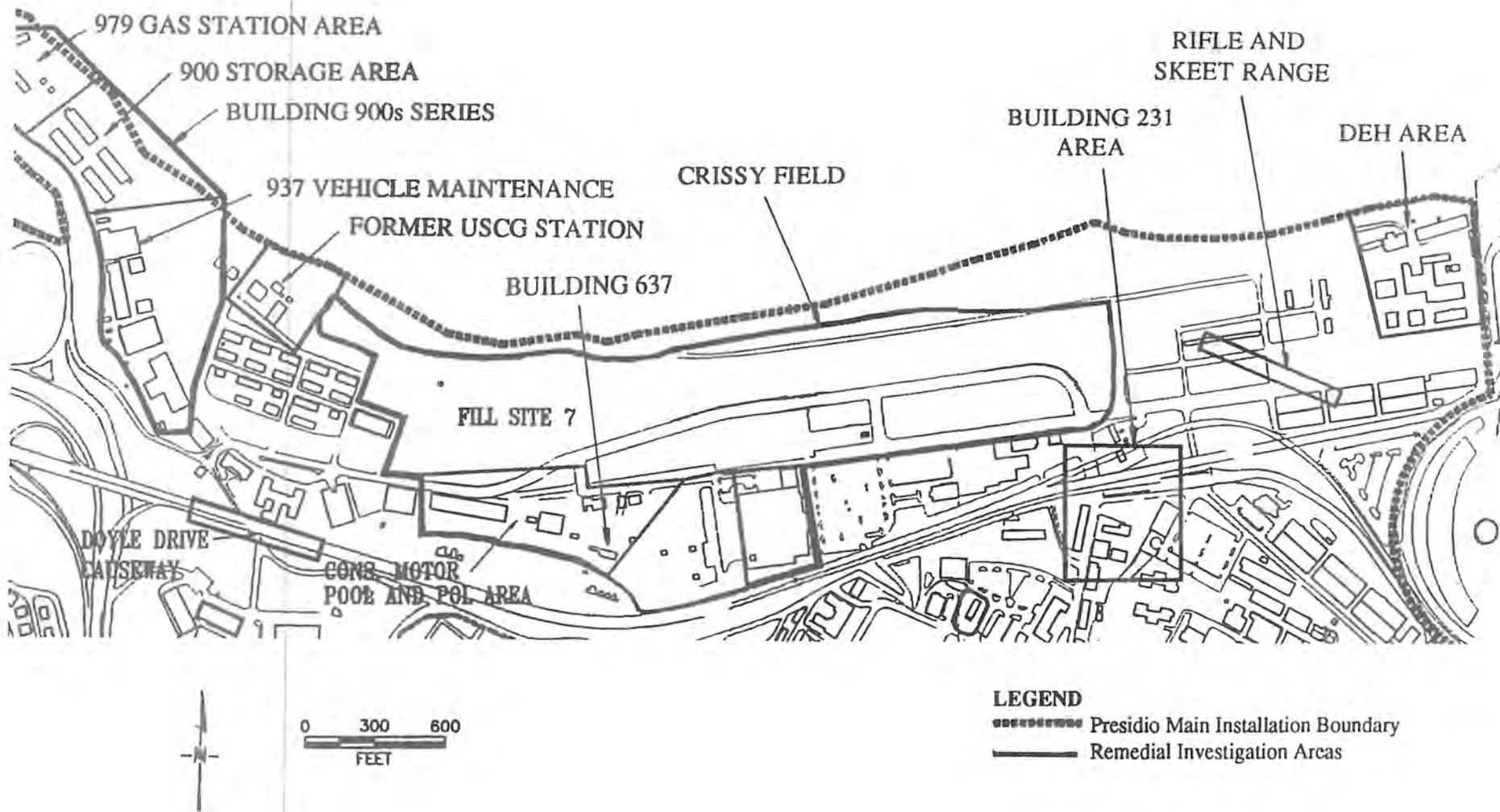
At the 937 site, groundwater contamination is being treated by a vacuum vaporization well as an interim measure. An evaluation will be conducted on the effectiveness of this system and the need for additional treatment.

Because the final version of the Army's RI/FS has not been released or approved, remedies for CERCLA sites at Crissy Field have not been finally selected. Final decisions for cleanup will be made in a ROD, after the RI/FS is final.

Under the petroleum program component of the Army cleanup, numerous USTs in the Crissy Field vicinity, including associated contaminated soil, are being removed. The FDS segment from Torpedo Wharf to Long Avenue is also scheduled for removal.

At the Building 637 and Building 231 sites and in areas of contaminated groundwater under the petroleum program, tank and soil removal and interim groundwater treatment actions have been implemented, and the need for groundwater remediation is under evaluation.

NPS and the Army are coordinating on the issues of plan implementation and remediation projects. Soil removal actions will be planned to occur before construction activities associated with the Crissy Field site plan implementation. Long-term groundwater remediation facilities will be planned and located to preclude their interfering with the features of the plan and will be accounted for in the plan design phase.



Source: Modified from Earth Technology Corporation 1995.

Figure 3-9
Hazardous Substances and Environmental Remediation Areas at Crissy Field

3.11 Scenic Resources

Crissy Field occupies a prominent position along San Francisco's waterfront just inside the entrance to the bay. Appropriately referred to as the "front yard" of the Presidio, this flat and generally open area serves as an important transition between the bay and the diverse topography and urban habitat of the city. Crissy Field's bayfront location affords awe-inspiring views of the scenic landscape of the Bay Area and is itself highly visible from the surrounding area.

The process for assessing the impacts of the project on scenic resources includes (1) the identification and description of key viewer groups and their level of sensitivity with respect to alterations in views of or from the project site, and (2) the existing visual character and quality of the project site and surrounding region from key viewing locations (e.g., roads, trails, and overlooks). The following paragraphs describe views of the site, both from within and outside the site plan area, as well as views of the surrounding area from the site.

3.11.1 Viewer Groups

Crissy Field attracts visitors for various recreational uses, such as bayfront activities, celebrations, competitions, and enjoying the area's impressive views. Viewer groups consist largely of visitors partaking in recreation opportunities, including walking, jogging, bicycling, dog walking, fishing, boardsailing, and picnicking. Travelers using the Doyle Drive and Golden Gate Bridge portions of U.S. 101 are also key viewers.

3.11.2 Views of the Site Plan Area from within Crissy Field

Visitors to Crissy Field have access to areas throughout the site plan area and therefore view the site from numerous locations. However, principal viewing locations are the roadways, such as Old Mason Street, and the shoreline Promenade, which both run east-west through Crissy Field. Generally, recreationists place a high level of importance on views in designated natural

and recreation areas (U.S. Forest Service 1974). Therefore, it is assumed that visitors to Crissy Field would be highly sensitive to adverse changes in the visual quality of views of the site resulting from the project.

The existing visual character of Crissy Field itself is presently less than optimal. Visitors entering Crissy Field from the east entrance near the Marina Green travel along Old Mason Street, the primary access to the site plan area. Views throughout the eastern portion of the site are of the building demolition site, a large paved parking lot, and sparse vegetation.

Farther west along Old Mason Street, the central area of the project site opens up into a broad field that includes the Golden Gate Promenade, a helicopter pad, and a weedy grassland area. The Promenade has an asphalt and gravel surface and runs along the northern edge of the area near the bay. The helicopter pad consists of concrete and is surrounded by a deteriorated chain-link fence. The broad areas of pavement and weedy vegetation detract from the area's visual variety or interest. Both the uniform lines of palm trees along Mason and Old Mason Streets and a small grove of cypress trees along the waterfront stand out prominently and contrast with the surrounding flat landscape. The western portion of Crissy Field contains a number of buildings and vegetation that are diverse in form and provide visual interest and variety to the landscape character.

3.11.3 Views of the Site Plan Area from Surrounding Areas

In addition to the site plan area being viewed from within Crissy Field itself, the site is visible from surrounding areas. Important locations with views of Crissy Field include the Golden Gate Bridge, the bay (e.g., views of boaters and windsurfers), and the roadways bordering the site to the south. Crissy Field figures prominently in scenic views from the Golden Gate Bridge for pedestrians and bicyclists overlooking the bay and San Francisco skyline.

Motorist traveling along Doyle Drive and U.S. 101 have brief views of Crissy Field from the roadway. Only pedestrians and passengers in buses and automobiles with higher seating placement have unobstructed views of Crissy Field from Doyle Drive.

AFFECTED ENVIRONMENT

Many of the smaller roadways surrounding the site plan area, such as Lincoln Boulevard, are used by recreationists and people traveling for pleasure. This viewer group generally has a high sensitivity for visual quality (U.S. Forest Service 1974). Although views of the site from these smaller roadways are somewhat limited, one important viewing location of Crissy Field is the overlook from a point on Lincoln Avenue near its intersection with Crissy Field Avenue.

The higher elevation at this overlook, just outside the site plan area, affords a 180-degree view to the north of the diverse landscape of the Bay Area in the background and the flat and generally open landscape of Crissy Field in the foreground. Patches of vegetation and light-colored buildings with red tile roofs are easily visible in the view of the site. These elements give the site a unified and somewhat orderly appearance. Large evergreen trees, including eucalyptus, pine, and cypress, provide visual interest and diversity and contribute to the area's natural open space character. The historic U.S. Coast Guard station northeast of the overlook and Torpedo Wharf are prominent landmarks near the edge of Crissy Field. Paved areas and sparse low-growing grass contribute to the open character of the western area of the project site. Views of San Francisco Bay, including the Golden Gate Bridge in the background, are vivid and impressive.

3.11.4 Views of Surrounding Areas from the Crissy Field Site Plan Area

Crissy Field's bayfront location affords expansive views of the surrounding landscape of the Bay Area. Visitors generally come to Crissy Field to engage in the various recreational activities that take advantage of the outstanding views of San Francisco Bay. These viewer groups would generally be highly sensitive to changes made to Crissy Field that might block or diminish these impressive views of the surrounding area.

The primary viewing locations of San Francisco Bay from the site plan area are along the length of the shoreline and Promenade. Impressive views from the Promenade are of San Francisco Bay west to the Golden Gate Bridge, Alcatraz Island, the Presidio, the San Francisco skyline, and the Palace of Fine Arts.

Other important views of the bay are from the interior of the site. The recent removal of buildings from the site provides new and expansive views to the bay, the San Francisco skyline, Alcatraz Island, and the Golden Gate Bridge.

The openness of the central area of the site provides unobstructed views of the waterfront, its sparsely vegetated sand dunes, the Golden Gate Bridge, the Presidio, and the San Francisco skyline. Views of the surrounding natural resources of the beach and ocean are generally intact.

Section 4.0 Environmental Consequences

4.1 Summary of Environmental Consequences

In this section, the potential environmental effects associated with construction of the Proposed Action or the Dune Alternative are described. Also included is a description of effects associated with the No-Action Alternative.

This analysis evaluates three general categories of environmental effects: direct, indirect, and cumulative effects. Direct effects are those that would be caused by the Proposed Action and would occur at the time the project is constructed or over time as the plan is put in place. Indirect effects also would be caused by the Proposed Action and may also occur at a future time or are physically removed from the project site, but are reasonably foreseeable. Cumulative effects would occur when the Proposed Action provides an incremental contribution to an environmental effect that is generated by past, present, or reasonably foreseeable actions.

Table 4-1 summarizes the impacts associated with the Proposed Action and alternatives evaluated in this EA.

The analysis is presented by alternative. Section 4.2 discloses the potential environmental effects of the Proposed Action, Section 4.3 discloses the potential environmental effects of the Dune Alternative, and Section 4.4 is a discussion of the environmental effects of the No-Action Alternative. Within these sections, environmental effects are organized into resource topics, as follows:

- land use impacts;
- recreation impacts;
- cultural resource impacts;
- geomorphology and soil impacts;
- water resource impacts;
- biological resource impacts;
- transportation impacts;
- air quality impacts;
- noise impacts;

- impacts on human health, safety, and the environment;
- scenic resource impacts; and
- cumulative impacts.

The results of the analysis conclude that the Proposed Action would not result in any significant adverse environmental effects. Overall, the Proposal would result in substantial improvement to the environment. Most of the environmental effects associated with land use, recreation opportunities and facilities, biological resources, cultural resources, transportation, and scenic resources would be beneficial. Environmental commitments included as part of the site plan design address potential environmental impacts. Adverse environmental effects would be minor. Most of the adverse effects would be temporary, occurring during the construction phase of the project.

Table 4-1. Summary of Environmental Consequences

Proposed Action	Dune Alternative	No-Action Alternative
Land Use Impacts		
Most consistent with NPS Management Policies: beneficial	Generally consistent with most NPS Management Policies: beneficial	Generally consistent with NPS Management Policies: less than significant
Most consistent with relevant land use plans and policies: beneficial	Generally consistent with relevant land use plans and policies: beneficial	Generally consistent with relevant land use plans and policies: less than significant
Change in availability of the helipad: less than significant	Change in availability of helipad: less than significant	No change from current use
Recreation Impacts		
Construction/improvement of visitor facilities: beneficial	Construction/improvement of visitor facilities: beneficial	No change in current facilities
Improvements to the Golden Gate Promenade: beneficial	Improvements to the Golden Gate Promenade: beneficial	No change in current facility
Temporary loss of recreational use/access during construction: less than significant	Temporary loss of recreational use/access during construction: less than significant	No construction, not applicable
Increase in total open space area accessible for recreation: beneficial	Increase in total open space area accessible for recreation: beneficial	Some increase in open space area as a result of building demolition program, limited accessibility
Improved safety and amenities for recreationists along Mason Street: beneficial	Improved safety and amenities for recreationists along Mason Street: beneficial	No change from current conditions
Change in parking location for recreationists at the west end: beneficial	Change in parking location for recreationists at the west end: beneficial	No change from current conditions

Table 4-1. Continued

Proposed Action	Dune Alternative	No-Action Alternative
Cultural Resource Impacts		
Restoration of Crissy Field airfield: beneficial	Restoration of Crissy Field airfield: beneficial	No change from current conditions
Restoration of Old Mason Street: beneficial	Restoration of Old Mason Street: beneficial	No change from current conditions
Planting of trees along Mason Street: beneficial	Planting of trees along Mason Street: beneficial	No change from current conditions
Construction activities in the vicinity of the Old Mason Street railroad tracks: less than significant	Construction activities in the vicinity of the Old Mason Street railroad tracks: less than significant	No construction, not applicable
Potential to disturb archeological resources: less than significant	Potential to disturb archeological resources: less than significant	No construction, not applicable
Geomorphology and Soil Impacts		
Potential changes in shoreline configuration resulting from removal and reconfiguration of bayshore rubble and construction of the tidal marsh inlet channel: less than significant	Potential changes in shoreline configuration resulting from removal and reconfiguration of bayshore rubble: less than significant	No rubble to be removed
Potential for closure of the proposed tidal marsh inlet channel: less than significant	Not applicable	Not applicable
Water Resource Impacts		
Potential short-term water quality impacts associated with construction activities: less than significant	Potential short-term water quality impacts associated with construction activities: less than significant	No construction, not applicable
Potential for increased saltwater intrusion to shallow groundwater aquifers: less than significant	Not applicable	Not applicable
Potential exposure of aquatic organisms to hazardous substances from tidal marsh construction: less than significant	Not applicable	Not applicable

Table 4-1. Continued

Proposed Action	Dune Alternative	No-Action Alternative
Vegetation and Wildlife Resources Impacts		
Ecological and educational benefits of construction of a tidal marsh: beneficial	Not applicable	Not applicable
Potential land use conflict between intense visitor use areas and natural habitat of the created wetland within the proposed site plan area: less than significant	Not applicable	Not applicable
Conversion of 11.0 acres of developed and landscaped area, 6.4 acres of annual grassland, and 2.6 acres of disturbed dune to tidal marsh: beneficial	Conversion of 12.2 acres of developed and landscaped areas and 7.8 acres of annual grassland to dune scrub in the central dune field: beneficial	No change from current conditions
Conversion of 10.1 acres of developed and landscaped area and 16.9 acres of beach areas to native dune communities: beneficial	Conversion of 10.1 acres of developed and landscaped area and 16.9 acres of beach areas to native dune communities: beneficial	No change from current conditions
Conversion of 0.4 acre of annual grassland and 2.4 acres of developed and landscaped areas to 2.8 acres of dune scrub in the east beach area: beneficial	Conversion of 0.4 acre of annual grassland and 2.4 acres of developed and landscaped areas to 2.8 acres of dune scrub in the east beach area: beneficial	No change from current conditions
Conversion of 33.9 acres of developed and landscaped areas and 11.3 acres of annual grassland areas to landscaped grassland: beneficial	Conversion of 33.9 acres of developed and landscaped areas and 11.3 acres of annual grassland areas to landscaped grassland: beneficial	No change from current conditions
Temporary disturbance to and long-term enhancement of beach habitat areas: less than significant/beneficial	Temporary disturbance to and long-term enhancement of beach habitat areas: less than significant/beneficial	No change from current conditions
Removal of non-native trees and shrubs: less than significant	Removal of non-native trees and shrubs: less than significant	No vegetation removal
Effects on fisheries: beneficial	Not applicable	Not applicable

Table 4-1. Continued

Proposed Action	Dune Alternative	No-Action Alternative
Transportation Impacts		
Potential addition of traffic to the roadway system as a result of visitor trips and construction-related trips: less than significant	Potential addition of traffic to the roadway system as a result of visitor trips and construction-related trips: less than significant	No change from current trends and conditions
Changes in traffic speeds and patterns along Mason Street: beneficial	Changes in traffic speeds and patterns along Mason Street: beneficial	No changes to Mason Street
Improvements to the pedestrian and bicycle facilities: beneficial	Improvements to the pedestrian and bicycle facilities: beneficial	No changes in facilities
Improvements to the east beach parking facility: beneficial	Improvements to the east beach parking facility: beneficial	No changes in facility
Reduction of total available parking for day-to-day use at Crissy Field north of Mason Street: less than significant	Reduction of total available parking for day-to-day use at Crissy Field north of Mason Street: less than significant	No change from current conditions
Reduction of total available parking space at Crissy Field for special events: less than significant	Reduction of total available parking space at Crissy Field for special events: less than significant	No change from current conditions
Air Quality Impacts		
Increased air pollutant emissions from construction activities: less than significant	Increased air pollutant emissions from construction activities: less than significant	No construction, not applicable
Air pollutant emissions from ongoing operations at Crissy Field: less than significant	Air pollutant emissions from ongoing operations at Crissy Field: less than significant	No change from current conditions
Noise Impacts		
Increased noise levels during construction: less than significant	Increased noise levels during construction: less than significant	No construction, not applicable
Potential noise effects from ongoing operations at Crissy Field: less than significant	Potential noise effects from ongoing operations at Crissy Field: less than significant	No change from current conditions

Table 4-1. Continued

Proposed Action	Dune Alternative	No-Action Alternative
Impacts on Human Health, Safety, and Environment		
Coordination of timing of Crissy Field site plan construction activities with Army remediation activities: beneficial	Coordination of timing of Crissy Field site plan construction activities with Army remediation activities: beneficial	Ongoing Army remediation activities at the site
Potential for mosquito generation: less than significant	No substantial change from current conditions	No change from current conditions
Scenic Resource Impacts		
Enhancement of existing views and provision of new high-quality views of the project site from within the site plan area: beneficial	Enhancement of existing views and provision of new high-quality views of the project site from within the site plan area: beneficial	No change from current conditions
Enhancement of existing views of the project site from surrounding areas: beneficial	Enhancement of existing views of the project site from surrounding areas: beneficial	No change from current conditions
Enhancement of existing views and provision of new high-quality views of the surrounding area from the project site: beneficial	Enhancement of existing views and provision of new high-quality views of the surrounding area from the project site: beneficial	No change from current conditions
Cumulative Impacts		
See Section 4.2.12	See Section 4.3.12	No change from current conditions

4.2 Environmental Consequences of the Proposed Action

4.2.1 Land Use Impacts

Because the basic land use of the area (public park and open space) would not change, implementation of the Proposed Action would not result in any significant land use conflicts or inconsistencies with relevant plans or policies.

4.2.1.1 Consistency with National Park Service Management Policies

The Proposal includes reestablishment of tidal wetlands, restoration of the historic airfield, restoration of native dune habitats, and provision of recreation and interpretive facilities for visitors. The Proposal would adhere to the NPS Management Policies by recreating, rehabilitating, and maintaining wetlands and perpetuating native plant life as part of natural ecosystems. It also would preserve and foster appreciation of cultural resources through restoration and interpretation and provide trails and facilities to assist park visitors in enjoying the park and understanding its significance. This effect is considered beneficial because, compared with existing conditions, this alternative is more consistent with the NPS Management Policies (National Park Service 1988).

4.2.1.2 Consistency with Relevant Land Use Plans and Policies

Of the three alternatives evaluated in this EA, the Proposal is the most consistent with relevant land use plans and policies. The GMPA specifies that the design for Crissy Field will incorporate a grass landing strip restored to its historic appearance and stipulates that, based on results of a feasibility study, tidal wetlands should be reestablished toward the east end of Crissy

Field (National Park Service 1994b). This alternative is the only one that incorporates all of the elements and objectives envisioned for Crissy Field in the GMPA.

The Proposal is also consistent with policies of the San Francisco Master Plan and the San Francisco Bay Plan. It furthers the objectives stated in the San Francisco Master Plan related to improving shoreline areas, promoting public recreation and open space along the shoreline, and providing habitat for many species. It achieves objectives in the Bay Plan related to protecting the coast as a natural resource; managing the use of the shoreline so as to best meet the needs of the public; and striving to increase public access to the bay, while restricting development that would have adverse impacts on the bay.

This effect is considered beneficial because, compared with existing conditions, the Proposal is not only consistent with, but further achieves the objectives of, the GMPA, the San Francisco Master Plan, and the San Francisco Bay Plan.

4.2.1.3 Change in Availability of the Helipad

Implementation of the Proposal would result in the removal of the existing concrete helipad and associated fencing, as called for in the GMPA, for restoration of the historic grass airfield. This helipad has been used for military purposes, emergency medical transport, and disaster relief. Although the permanent features would be removed, the configuration of the restored airfield would provide a considerable amount of open space that could continue to be used to accommodate emergency helicopter landing. To reduce helicopter traffic at Crissy Field, NPS will work with the City of San Francisco to identify other options to accommodate emergencies not related to the operation of the park and will phase out these uses as other options are identified.

This impact is considered less than significant because the helipad is a nonconforming use within the recreational open space and is generally disruptive to recreational use and wildlife. Reducing the use of this facility to park-related emergencies and disaster relief will reduce a conflicting land use. Elimination of the fencing and concrete pad will allow restoration of the historic airfield.

4.2.1.4 Land Use Conflicts between Intense Human Use Areas and Natural Habitat within the Tidal Marsh

See Section 4.2.6.2 for a discussion of this issue.

4.2.1.5 Executive Order on Environmental Justice

Under Executive Order No. 12898, federal agency analysis of actions under NEPA must include evaluation of the potential for disproportionate environmental, social, or economic effects on minority and low-income communities. The Proposal is not expected to result in any disproportionate adverse effects on minority or low-income communities.

4.2.2 Recreation Impacts

Table 4-2 presents a comparison of recreational opportunities under each site plan alternative.

4.2.2.1 Construction/Improvement of Visitor Facilities

Under the Proposed Action, visitor facility improvements would include removal of excess pavement, including several existing streets; providing paved and grass parking areas for vehicles and sailboard equipment; constructing a new entrance gateway; and constructing a new restroom with outdoor showers at the east end of the site. The Proposal would enhance the boardsailing capability and important beach access of the site by providing facilities and expanding the rubble-free beach. Boardwalks, overlooks, and wildlife viewing blinds would be constructed in the central (tidal marsh) area of the site. Additional parking, picnic facilities, and festival/event space would be constructed in the western portion of the site. New facilities for special events would include provision of electricity and water, in addition to the space for events and parking. Provision of these amenities is considered a beneficial effect because it would improve the quality of facilities at Crissy Field for recreationists.

4.2.2.2 Improvements to the Golden Gate Promenade

Under both construction alternatives, the Promenade would be altered to accommodate, enhance, and complement the restored natural habitat areas. The Promenade would be altered to a uniform 20 feet in width with stabilized aggregate or a crushed oyster shell surface. It would provide ample room for pedestrians and cyclists. The surface material would also improve safety by discouraging cyclists from moving at excessive speeds. Recreationists requiring a harder surface, such as in-line skaters and faster moving cyclists, would likely be more attracted to the Mason Street pedestrian and bicycle paths. Data from visitor use surveys indicate that the highest recreational use at Crissy Field, by far, is pedestrian use (Clemons pers. comm.), so it is important to provide an improved safe and attractive facility for this use. Seating and overlooks would be created along the Promenade. Shifting the Promenade away from the shoreline at the east end would reduce or eliminate the potential for wave damage. This effect is considered beneficial, because redesign and improvement of the existing Promenade facility would be appropriate and attractive for the most popular recreational activities at Crissy Field (walking and jogging).

4.2.2.3 Temporary Loss of Recreational Use/Access during Construction

During the 12- to 18-month construction period, access to and use of the site would be disrupted by grading activities, construction of facilities, and revegetation. Because detours and temporary parking areas will be provided to ensure that as much of the site as possible will remain accessible, this minor and temporary inconvenience is not considered significant.

4.2.2.4 Increase in Total Open Space Area Accessible for Recreation

Under the Proposed Action, the amount of open space available for multiple recreational activities, (e.g., dog walking, beach use, bird watching) would increase compared with present conditions. Although creation of the tidal marsh would limit certain types of recreation in that area, the overall amount

Table 4-2. Comparison of Recreational Opportunities

Recreational Opportunities	Proposed Action	Dune Alternative	No-Action Alternative
Site components	30 acres of improved Promenade and beach	30 acres of improved Promenade and beach	30 acres of Promenade and beachfront
	28 acres of grassy field	28 acres of grassy field	70 acres of asphalt, roads, and buildings (of which almost 30 acres are closed to the public)
	20 acres of tidal marsh	20 acres of stabilized dune	
	22 acres of picnic areas, visitor amenities, parking	22 acres of picnic areas, visitor amenities, parking	
Multi-use event space	28-acre airfield	28-acre airfield	17.9 acres
Golden Gate Promenade	1.5 miles, 20-foot width, uniform surfacing	1.5 miles, 20-foot width, uniform surfacing	1.5 miles, width varies from 6 to 30 feet, various surfaces
Mason Street Bicycle and pedestrian path	1.2 miles	1.2 miles	0.2 mile
Visitor support facilities	Restrooms, showers, bicycle facilities	Restrooms, showers, bicycle facilities	Portable toilet
Picnicking facilities	Tables at east end, group picnic facilities at west end	Tables at east end, group picnic facilities at west end	Two tables at central beach
Allowable area for off-leash dog activities	70 acres	70 acres	38 acres
Rubble-free beach area	4,500 linear feet	4,500 linear feet	2,000 linear feet
Facilities meeting accessibility standards	All trails and visitor amenities	All trails and visitor amenities	0.2-mile trail, portable toilet
Total area	Approximately 100 acres	Approximately 100 acres	Approximately 100 acres

of space accessible for these activities (80 acres) would be more than currently exists (66 acres) (Table 4-2). Large areas in the West Bluff improvements area, east of the wetland, on the grass airfield, and along the shoreline and beach area would be opened up and improved to accommodate a variety of recreation activities. This effect is considered beneficial.

4.2.2.5 Improved Safety and Amenities for Recreationists along Mason Street

Mason Street would be realigned slightly in three locations and the width of the travel lanes narrowed from 20 feet to 12 feet. A separate bicycle path for higher speed through-traffic bicycles and an 8-foot-wide pedestrian path would also be added along Mason Street. A 5-foot-wide median strip would separate vehicular traffic from bicycle and pedestrian traffic, and another 5-foot-wide median would separate the bicycle path from the pedestrian path. The proposed width changes and curved alignment adjacent to the airfield are expected to result in lower traffic speeds and make this road less attractive as a through-traffic shortcut to the Golden Gate Bridge. This effect is considered beneficial because it would allow safer travelways for Crissy Field cyclists and pedestrians.

4.2.2.6 Change in Parking Location at the West End

The small parking lot east of the U.S. Coast Guard station would be eliminated, and a larger parking lot would be constructed at the West Bluff. This impact is beneficial because it would eliminate vehicle traffic crossing the Promenade to access parking areas and it would improve parking at the west end of the site. However, launching of watercraft would not be permitted through the waterbird protection area, as stipulated in the GMPA.

4.2.2.7 Optional Management Scenarios for Off-Leash Dog Activities

Under the proposed scenario for off-leash dog use areas, the allowable area for off-leash dog activities would be nearly double (70 acres) compared with current conditions (38 acres). As described in Section 2.2.4, "Dog Management Options", this and other dog use area options that would enhance, maintain, or reduce the amount of space available for this activity

are still being considered. Any of the dog management scenarios could be implemented with either the Proposed Action or the Dune Alternative.

Under the proposed dog management scenario, the area allowed for off-leash dog activities would increase from existing conditions, allowing dog activities on the airfield, the Promenade and beach east of the U.S. Coast Guard station, and in the East Beach area. This would be a beneficial impact on recreation opportunities for dog enthusiasts.

An alternative management scenario being considered would allow off-leash dog activities on the airfield, the Promenade, and the beach east of the U.S. Coast Guard station—an area also larger than is available presently for this activity. This option would also result in a beneficial impact on recreation opportunities for dog enthusiasts.

A second alternative management scenario would allow off-leash dog activities on the airfield and the beach and Promenade adjacent to the airfield only. This area would be slightly smaller than the size of the area currently available for dog activities. The slightly smaller area available would be roughly the same as the area currently available; therefore, the impact on recreation opportunities for dog enthusiasts would be less than significant under this option. More area would be available for wildlife use and for recreationists who want more space without potential dog conflicts. This option would have beneficial effects on wildlife and other recreationists.

A third alternative management scenario would allow off-leash dog activities on the Promenade and beach areas east of the U.S. Coast Guard station only. The effect on recreation opportunities for dog enthusiasts would result in less area available for dog use and more area available for recreationists who want more space without potential dog conflicts; therefore, this impact would be less than significant.

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4.2.3 Cultural Resource Impacts

4.2.3.1 Compliance with Section 106 of the National Historic Preservation Act

In 1994, a programmatic agreement (PA) was developed to address the effects of implementation of the GMPA on historic properties at the Presidio. All effects of the Proposed Action were addressed in the PA.

4.2.3.2 Restoration of Crissy Field Airfield

Crissy Field airfield has national significance as the first air coast defense station on the Pacific Coast and because of its association with important aviation milestones and famous aviators. It is the only such airfield in the entire nation that retains integrity. All landscape features and support structures of this important military airfield still exist at the west end of Crissy Field. Crissy Field airfield operated at three distinct time periods over 55 years, starting with the initial designation as a military airfield in 1919 and ending with the final closure in 1974. The earliest operational period was the time when the airfield had the greatest influence on the nation's history.

The existing airfield site includes multiple layers of construction representing continual expansion through time. The large asphalt runway remains as the last of a series of landing strips that became successively longer over time. Most of the structures that remain at the site relate to the military airfield; however, there are other structures that were constructed during periods when the airfield was not in operation.

The restoration of Crissy Field airfield will create excellent opportunities to enhance the historic qualities of the airfield and to provide educational and interpretive benefits. The restoration of the site will be guided by the time frame of the airfield's period of national influence (1920-1930), when the landing field consisted of a grass surface over a clay base. Educational opportunities will be facilitated by the removal of some structures that were constructed later and reconstruction of the configuration and dimensions of the earlier landing field.

In addition, restoration of Crissy Field will also enhance the historic setting for structures and landscape features outside of the plan area because the restoration will provide a better context for appreciation of the air base as a whole. Restoration of Crissy Field airfield is considered a beneficial impact.

4.2.3.3 Restoration of Old Mason Street

In 1917 and 1919, Fort Mason's supply depot expanded into the Lower Presidio, resulting in the construction of 13 warehouses. These warehouses were served by the State Belt Railroad of California, which was extended from Fort Mason for that purpose. One set of the warehouses was constructed adjacent to what would become Old Mason Street.

Old Mason Street was built in 1920, probably to facilitate access to the warehouses. The realignment of Mason Street, constructed between 1946 and 1963 (Adams 1995), resulted in a change to the original street layout of the Crissy Field area. The Proposed Action would result in the restoration of Old Mason Street to its historical alignment, which followed the curving south edge of the airfield. This restoration would provide better context and continuity for the Crissy Field historic setting and would also enhance the restoration of Crissy Field airfield. Restoration of Old Mason Street to its original alignment is considered a beneficial impact.

4.2.3.4 Planting of Trees along Mason Street

The Army's 1992 removal of a commissary along the north side of Mason Street at the Marina Gate entrance created a void where a linear streetscape had been before. Under the Proposal, development at the Marina Gate would be compatible with the historic entrance treatment elsewhere on the Presidio, which attempted to define a distinct border using groves of trees associated with formal gates. The former linear quality of the entrance would be restored through landscaping, without loss of the vista toward the Golden Gate because of appropriate spacing between the newly planted trees. The entrance gate itself will be treated in a manner more appropriate to a major entrance to the former military post and national park.

4.2.3.5 Construction Activities in the Vicinity of the Old Mason Street Railroad Tracks

The warehouses at Crissy Field were originally served by the railroad, which had tracks extending down both Gorges Avenue and Old Mason Street. The tracks on Gorges Avenue have been removed, but the tracks on Old Mason Street are intact/remain in place approximately halfway along the distance of Old Mason Street (Adams 1995). The Proposal would require excavation work in the vicinity of the Old Mason Street railroad tracks; however, the location of the tracks is known and the tracks will be avoided during construction. The tracks will be covered with asphalt or soil to protect them from future disturbance. No adverse effects on the Old Mason Street railroad tracks are anticipated, and no additional mitigation is necessary.

4.2.3.6 Potential to Disturb Archeological Resources

Based on archival and other historical research, several areas of high archeological sensitivity have been identified that could be affected by implementation of the Proposal. These areas, described in Section 3.3, "Cultural Resources", of "Affected Environment", have been generally located and plotted on maps and the information has been incorporated into the design plans for the Proposal.

Plans have been designed to avoid affecting specific areas known to contain archeological resources. Documentary research and test excavations will be conducted in the location of the historic Quartermaster wharves and prehistoric site CA-SAR-6 to assist in identifying and avoiding significant remains at these sites during project implementation. An archeological monitoring program designed in accordance with the 1994 Programmatic Agreement will be used to evaluate and record historic features that may be discovered during the project, as noted in Section 3.3.

In the event of discovery of either prehistoric sites or burials, consultation will be initiated with appropriate Native American groups in accordance with the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act.

4.2.4 Geomorphology and Soil Impacts

The site plan alternatives were evaluated to determine whether impacts on the existing soils and geomorphologic features in the project area would result. Potential impacts of the Proposal related to erosion, sand deposition and removal, siltation, and soil quality and productivity are disclosed in this section.

4.2.4.1 Potential Changes in Shoreline Configuration Resulting from Removal and Reconfiguration of Bayshore Rubble

Based on an evaluation of existing rubble and need for shore protection, several segments of the Crissy Field bayshore would be affected by rubble removal/beach restoration (Figure 2-14) (Philip Williams & Associates 1996b). About 600 feet of engineered shoreline protection would be installed at the far western (Torpedo Wharf) and easternmost (Lyon Street boundary) portions of the shoreline. The rubble at the eastern end would be replaced with a stepped stone and concrete structure. Six hundred feet of terraced rubble would be retained in a section along the shoreline of the West Bluff picnic area and a section just east of the tidal marsh inlet channel. The Proposal also includes removal of 4,500 linear feet of existing rubble along the Crissy Field bayshore, exposing more sand beach in areas where shore protection is not needed. Exposed isolated occurrences of rubble protruding from the sand along a 1,400-foot length of shoreline just west of the tidal marsh inlet channel would also be removed.

These actions would result in alteration of the shoreline configuration as shown in Figure 4-1. The primary effect would be to expand the extent of natural beach along the Crissy Field shoreline through removal of rubble. Generally, removal of rubble would allow the beach to adopt a flatter slope and widen. This, in turn, would allow windblown sand to sustain and develop coastal dune ecosystems behind the beach along more of the shoreline, as shown. The East Beach would be extended by about 800 feet as a result of rubble removal.

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Rubble would be retained or replaced with engineered structures where needed for shore protection. The existing outfall at the East Beach would be replaced with a groin structure to protect the beach.

Rubble removal and dune restoration would have a negligible effect on net littoral transport of sand to the east and would not affect current siltation problems in the yacht harbor. This is because existing rubble is mainly on the upper part of the beach and does not impede the littoral transport of sand. Also, while creation of foredunes would increase the capture of sand from the beach, the volume would be small compared with littoral transport rates (Philip Williams & Associates 1996b).

4.2.4.2 Potential for Closure of the Proposed Tidal Marsh Inlet Channel

Flushing of the marsh through tidal action is important to the marsh ecosystem health and function. Extensive evaluation of its ability to sustain an open channel to the bay was conducted (Dames & Moore 1995a, Philip Williams & Associates 1996b).

The Proposal includes a natural tidal inlet channel as the means to introduce and maintain tidal flow into the created tidal wetland. Initially, the tidal marsh would have sufficient tidal prism (the volume of water moving in and out on a tidal cycle)—approximately 62 acre-feet—to maintain an open entrance channel, scouring and clearing any sand deposited by wave action. Over time, estuarine sedimentation would occur within the site, decreasing the tidal prism. Based on measurements of sedimentation near the St. Francis Yacht Harbor, it appears that sedimentation rates are low. Eventually, as the tidal marsh matures, tidal scouring and wind action would balance sedimentation, maintaining an equilibrium tidal prism of about 18 acre-feet. Based on detailed calculations of the tidal prism over time, it is predicted that the tidal prism of the marsh would be sustained above 25 acre-feet (sufficient to maintain an open channel) for at least 30 to 50 years (Philip Williams & Associates 1996b). Existing rubble under the beach that would remain would provide additional stability to the channel inlet system.

As the tidal prism is reduced, the risk of closure increases during rare periods of high wave action, when sand movement is high, and during neap tides

(monthly tide of lowest daily range), when tidal scouring is low. Typically, a closure may occur during the flood tide, when wave action creates a sand berm higher than the tide level in the marsh. In most instances, it is expected that the berm would be breached during succeeding spring tides (monthly tide of highest daily range) and low wave action or as a result of the outflow of fresh water eroding the berm (Philip Williams & Associates 1996b).

To avoid potential problems associated with the scenario described above, the Proposal also includes the following elements to prevent extended periods of closure of the entrance channel as key design and management criteria:

- designing for as large a tidal prism as possible in the wetland;
- discharging freshwater flows through the tidal marsh entrance channel;
- mechanically excavating accumulated beach sand requiring several hours of backhoe use, if necessary; and
- designing the tidal marsh to allow for its possible expansion south of Mason Street to 30 acres in a future phase, ensuring that the tidal prism would always be greater than 25 acre-feet.

The Proposal also includes the possible future construction and extension into the bay (to low-tide level) of an open culvert in the event of frequent channel blockage to increase the efficiency of the tidal opening. It would be removed if the marsh is expanded, restoring the tidal prism to levels that are self-sustaining. Because these contingent plans for any needed maintenance or extension of the infrastructure are included as part of the Proposed Action, this impact is considered less than significant.

4.2.5 Water Resource Impacts

Potential impacts of the Proposed Action related to water quality, drainage, and hydrology are disclosed in this section.

4.2.5.1 Potential Short-Term Water Quality Impacts Associated with Construction Activities

Construction activities that would be required for Crissy Field site improvements have the potential to cause short-term water quality impacts on nearshore areas of San Francisco Bay, natural drainageways, or the stormwater system as a result of increased soil erosion and discharges of construction-related materials (e.g., fuels, lubricants, solvents, and cleaners) to surface waters. Activities that could disturb and expose soil to forces of erosion include earthmoving and grading operations, road construction, and long-term maintenance activities within the tidal marsh to remove accumulated sands and maintain adequate tidal flushing. Erosion and related construction impacts could result from various cut, fill, and grading activities; removal of asphalt from the existing airfield; and beach restoration and rubble removal along the bay shoreline.

The total amount of soil disturbance for construction is estimated to be 284,500 cubic yards, including approximately 7,000 cubic yards that would be excavated to create the channel inlet for the tidal marsh. The excavated sediments would be used as fill for other features at Crissy Field, such as the airfield restoration. Because the site is relatively flat, the potential for erosion is considered low. Furthermore, the site was not identified as having high or moderate erosion potential in the Presidio of San Francisco Storm Water Management Plan (Dames & Moore 1994). Although the potential for soil erosion during construction is low, NPS will comply with conditions of National Pollutant Discharge Elimination System (NPDES) general construction activity stormwater permits, including implementing erosion control plans and stormwater pollution prevention plans (SWPPPs). Measures used will include best management practices (BMPs) to minimize soil erosion, including structural, management, and vegetation measures (Dames & Moore 1994). NPS will minimize the discharge of soil and pollutants during excavation by requiring contractors to employ measures to contain disturbances within localized areas, including use of turbidity barriers, use of silt curtains, or equivalent measures. Routine monitoring and reporting of BMP performance will be conducted by NPS pursuant to the NPDES permits. Compliance with the BMPs included in the plans will result in a minimal amount of soil erosion, and discharges of construction-

related pollutants would be minimized. This potential impact is considered less than significant.

4.2.5.2 Potential for Increased Saltwater Intrusion to Shallow Groundwater Aquifers

Excavation of the wetland would expose inland subsurface strata to tidal action and could subsequently increase saltwater intrusion to shallow aquifers and degrade the quality of potential domestic water supplies. Potential impacts of saltwater intrusion are considered less than significant because the existing shallow aquifer in the proposed tidal marsh footprint is not currently used for domestic supply purposes. The nearest existing well is more than 1 mile to the south near Mountain Lake. Furthermore, the movement of groundwater is toward the bay to the north and saltwater intrusion therefore would not contaminate downgradient supply wells. Hydraulic conductivity and gradient of the water-bearing strata are relatively low and would resist the movement of saltwater from the tidal marsh. It is also unlikely that future potential beneficial uses of the groundwater in the tidal marsh footprint would be impaired, because existing secondary taste and odor conditions and the potential for subsidence would deter use of the water supply in the tidal marsh vicinity (Hiett pers. comm.). Additionally, tidal marsh creation should not negatively affect future usability of groundwater in other areas of Crissy Field that do not have these characteristics beyond the tidal marsh vicinity.

4.2.5.3 Potential Exposure of Aquatic Organisms to Hazardous Substances from Tidal Marsh Construction

Excavation for the tidal marsh could create areas that intercept shallow groundwater containing hazardous substances from historical waste discharges and potentially expose aquatic flora and fauna to toxic substances. Groundwater that contains hazardous substances could cause acute and chronic toxicity to sensitive aquatic organisms if concentrations exceeded the established thresholds. Risk-based analyses conducted for NPS for the feasibility of tidal marsh restoration (Dames & Moore 1995a) suggest that observed groundwater concentrations of aluminum, chromium, copper, magnesium, manganese, and zinc are present in levels that could cause toxicity to organisms. The report concluded that risks to aquatic organisms would be low because the wetland would have substantial exchange of

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seawater from the daily tidal cycle in relation to freshwater sources, and would therefore dilute any contaminants to negligible concentrations (Dames & Moore 1995a). In addition, the tidal marsh would be designed to sufficiently maintain the open channel naturally for 30 to 50 years. If the tidal inlet channel were to be closed for longer than several days, NPS would monitor conditions and, if necessary, perform mechanical maintenance to open the channel to ensure adequate tidal flushing, thus eliminating any potential for extended closure.

The most recent remedial investigation (RI) (Dames & Moore 1995b) prepared for the Army performed a more general risk-based analysis and concluded that moderate risks existed for certain receptor organisms at Crissy Field. However, the study assumed a very conservative scenario of receptors exposed only to groundwater with no dilution from water that has low or negligible contaminant concentrations. Given the normal conditions of tidal exchange that would exist in the proposed wetland, the potential for accumulations of concentrations toxic to susceptible flora and fauna that inhabit the wetland is considered low.

Although the risk of toxic contamination of aquatic organisms is considered low, contaminant levels in the project area will be monitored. Corrective measures will be implemented if areas are found to exceed risk criteria. These measures could include subsurface barriers, impermeable soil caps, or interceptor drains. The Army's final RI, feasibility study (FS), and Ecological Sampling and Analysis Program investigations have not been completed and, therefore, more precise analyses of the potential effects and appropriate corrective measures are pending results of the reports. As noted in Section 3.5.3.3, at the 637 site the Army has already initiated remedial actions for contaminated soil and the need for a groundwater treatment system to be installed is under evaluation. Tidal marsh construction activities will not begin until the necessary cleanup activities in the affected project area are complete.

4.2.6 Biological Resource Impacts

No special-status plants are known to exist at Crissy Field. In addition, no special-status wildlife species are known to breed at Crissy Field or use the site on a regular basis. The Proposed Action would not result in any adverse

effects on threatened or endangered species. Although the tidal marsh and associated upland buffer areas would provide increased potential natural habitat for special-status wildlife species such as California clapper rail, black rail, and salt marsh yellow throat, it is not likely that these species would inhabit this area because of the isolated nature of the tidal marsh and the intensity of human activity in the area. NPS does not intend to introduce any threatened or endangered species into the area.

The Proposal would, however, provide a number of benefits related to biological resources, including public education, increased biological diversity of the area, and an increase in areas occupied by natural habitats on the site, compared with present conditions. Table 4-3 compares the acreages of habitat types under each alternative. Figure 4-1 shows the habitat types that would exist under the Proposal.

4.2.6.1 Ecological and Educational Benefits of Construction of a Tidal Marsh

The Proposal includes construction of a 20-acre tidal marsh in the central portion of the site. After the basic construction is completed, the tidal marsh would continue to develop over time as plant propagules are brought in on the tides and through NPS management of the site. Diversity of wildlife expected to use the marsh should be moderate to high, especially for shorebirds and wading birds, such as American avocet, plovers, herons, egrets, marbled godwits, and sandpipers, and for dabbling ducks and diving ducks, especially in winter. Wildlife diversity would not be as high, however, as in a larger marsh that is surrounded by natural habitats and undisturbed by human activity. The site is accessible by MUNI, in close proximity to a large urban population, and near the future Presidio shuttle stop. Because the proposed marsh is isolated from other marshes, many animals, including special-status species such as the saltmarsh harvest mouse, would not be able to reach or occupy the site. Some of the ecological benefits of the wetland include providing habitat for marsh plants, wildlife, invertebrates, and juvenile fish rearing. Appendix A provides a list of plant and wildlife species that could occur at Crissy Field.

The tidal marsh area would also include overlooks that would allow visitors to view this area and experience the wetland environment. Interpretive

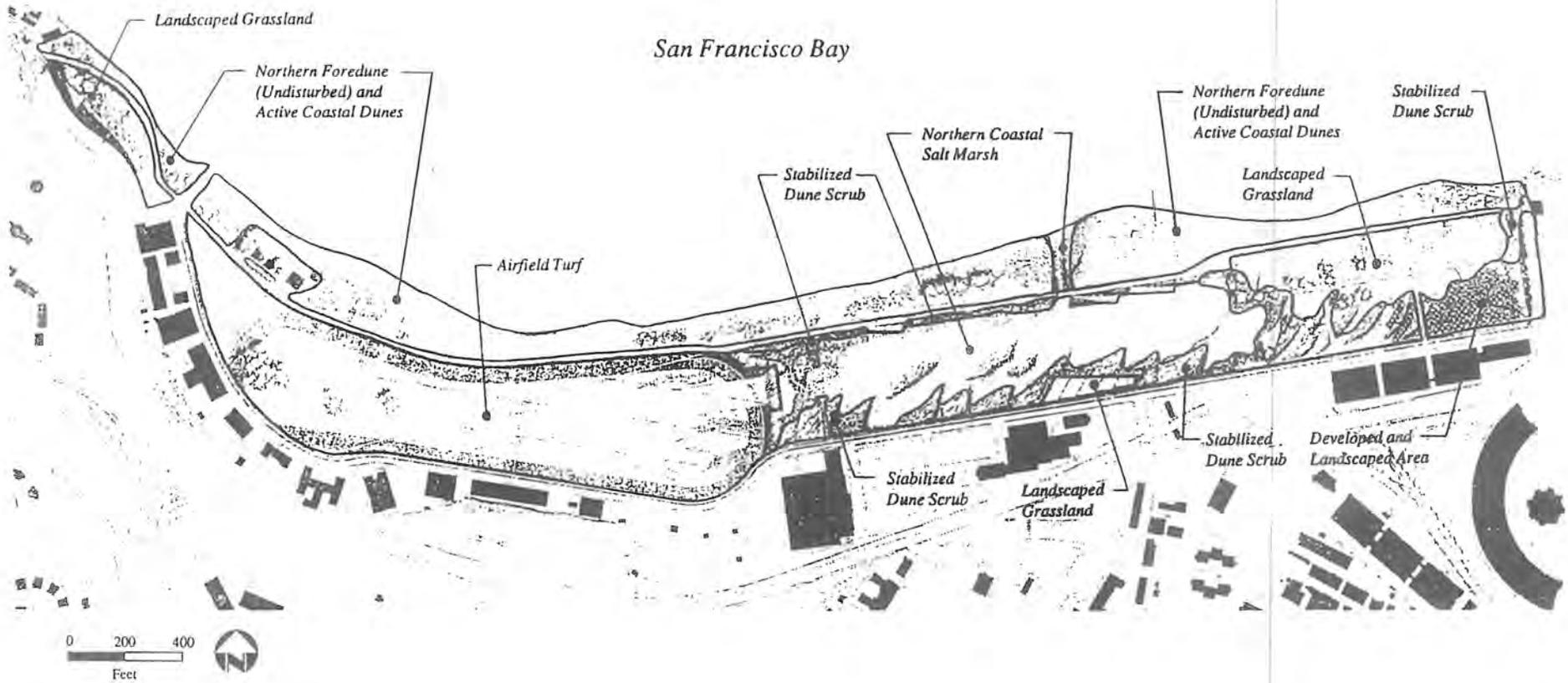


Figure 4-1
Habitat Types under the Proposed Action

Table 4-3. Comparison of Habitat Acreages

Habitat Type	Proposed Action	Dune Alternative	No-Action Alternative
Northern foredune (undisturbed) and active coastal dunes ^a	27.0 acres	27.0 acres	2.6 acres
Northern foredune (disturbed) and active coastal dunes ^a	None	None	16.9 acres
Stabilized dune scrub	8.0 acres	28.0 acres	None
Airfield turf	28.0 acres	28.0 acres	None
Landscaped grassland	12.0 acres	12.0 acres	18.1 acres
Developed and landscaped areas	5.0 acres	5.0 acres	62.4 acres
Tidal marsh	20.0 acres	None	None
Total	100 acres	100 acres	100 acres

^a Includes beach.

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stations would enhance the educational opportunities provided by the marsh. From an educational perspective, it would provide a great place for people to learn about marsh restoration, tides, tidal marsh zones, marsh evolution, birds, invertebrates, and plants. Educational opportunities associated with the tidal marsh would be unique in San Francisco. Also, many interactive opportunities for community involvement in restoration activities, such as revegetation, would be provided. The ecological benefits and the public educational opportunities that would be afforded by the tidal marsh are considered beneficial.

4.2.6.2 Potential Land Use Conflict between Intense Visitor Use Areas and Natural Habitat of the Created Wetland within the Proposed Site Plan Area

Because of the intense visitor uses along the Promenade and the proposed access, there is a potential conflict with the ecological values of the wetland. At the three proposed Promenade overlooks at the north end of the site plan area, intense visitor use would interface with the natural environment of the wetland. Overlooks would be provided along approximately 600 feet of the marsh perimeter. Of that 600 feet, only the 200 feet of eastern overlook would allow direct access to the edge. All other overlooks would be separated by buffering vegetation to minimize visitor disturbance. The boardwalk would cross 320 feet of the marsh.

The created wetland would serve four basic functions or values: ecological, educational, historical, and aesthetic. The proximity of visitor uses affects the degree to which the wetland would meet each of these functions. The plan achieves a good balance between maximizing the ecological benefits described above with allowing visitors access to the area to interpret the historical values and experience the aesthetic and educational values of the wetland. Approximately 90% of the shoreline of the tidal marsh would be surrounded by buffering vegetation, minimizing the impact of visitor use. Because of the lack of direct access to some of the perimeter of the tidal marsh, even with the boardwalk and three Promenade overlooks (some of which are designed as blinds), the tidal marsh would still serve important ecological functions.

The hidden barrier fencing and vegetation buffer would be constructed to keep people and dogs out of sensitive natural areas. No dogs would be allowed in the tidal marsh, and interpretive signs would be installed to educate users about appropriate uses. Self-closing gates would be installed at boardwalk and overlook entrances to prevent access by dogs. It is not expected that the marsh would become established habitat for endangered species, such as the California clapper rail or the saltmarsh harvest mouse, because of the intensive human use of that area, the limited size and isolation of the tidal marsh, and the lack of adjacent upland habitat.

The level and diversity of bird use of the area would also be expected to increase from current conditions. If the Promenade were relocated away from the tidal marsh or the overlooks removed, the aesthetic and educational values to the public would be diminished and there would probably be only a negligible and unnoticeable increase in wildlife use of the tidal marsh as a result of decreased disturbance from people. Through the design features described above, the potential for conflicts between visitors and natural values has been minimized; therefore, the impact of this potential conflict is considered less than significant.

4.2.6.3 Conversion of 11.0 Acres of Developed and Landscaped Areas, 6.4 Acres of Annual Grassland, and 2.6 Acres of Disturbed Dune to Tidal Marsh

A 20-acre tidal marsh, consisting of an open water lagoon, sand flats, mud flats, and vegetated marsh plain, would be created on Crissy Field, primarily displacing non-native developed and landscaped areas and annual grassland. The 20-acre marsh system would include 11.3 acres of intertidal and subtidal marsh, 2.4 acres of transitional marsh, 3.5 acres of sand/mud flat, and 2.8 acres of associated upland habitat.

Because of its connection with the Bay, the tidal marsh would also displace a small amount of native restored dune and beach and non-native disturbed dune. About 2.6 acres of existing foredune habitat would be removed for construction of the tidal marsh inlet channel. The effect on dune vegetation would be minor because of the small amount of dune that would be affected; because native plants would be salvaged; and because, overall, the project would result in a net increase in native dune habitat restored.

The impact of converting the developed and landscaped areas and grassland to tidal marsh is considered beneficial because non-native habitat areas would be converted to native habitats, creating a native community that is in decline, and it would greatly increase the biological diversity of the site. It would also create habitat for wetland-dependent native plant and wildlife species such as Virginia rail, sora, song sparrow, and marsh wren. Because the tidal marsh would be isolated from other wetlands, it is difficult to predict whether native small mammals, reptiles, or amphibians would use the site. A more complete list of native plant and animal species that could occupy the tidal marsh is included in Appendix A.

4.2.6.4 Conversion of 10.1 Acres of Developed and Landscaped Area and 16.9 Acres of Disturbed Fore-dune Areas to Native Dune Communities

Restoring native fore-dune communities north of the Promenade would result in the conversion of degraded beach areas and developed and landscaped areas to native fore-dune habitat occupied by native plant species. This action is considered beneficial because it would replace non-native habitat with native habitat and would promote the occurrence of native plant species. Wildlife habitats dominated by non-native plants would be replaced with wildlife habitats dominated by native plants. Native wildlife would benefit from habitat restoration because native plants provide food and cover for native animals, especially insects.

Dune restoration would also be implemented along the Promenade in disturbed dune and beach habitat. This action is also considered beneficial because it would result in a plant community and associated wildlife habitat currently dominated by non-native plant species being replaced by a community dominated by native plant species.

Because Crissy Field is disturbed by a high level of human activity, it is difficult to determine future wildlife use of Crissy Field. Potential native wildlife species that could potentially occur in the dune habitat include the killdeer, ring-billed gull, western gull, house finch, mourning dove, Brewer's blackbird, and reptiles.

4.2.6.5 Conversion of 5.6 Acres of Annual Grassland and 2.4 Acres of Developed and Landscaped Areas to Dune Scrub in the East Beach Area

About 5.6 acres of non-native annual grassland and 2.4 acres of developed and landscaped areas would be converted to 8.0 acres of native dune scrub in the East Beach area. This impact is considered beneficial because non-native plant communities would be replaced with native plant communities. Implementing this action would create habitat for dependent native dune scrub plant and wildlife species. As noted above, native wildlife would benefit from dune scrub restoration, because native plants provide food and cover for native animals, especially insects. Native wildlife species that could potentially occur in the dune scrub habitat include the mourning dove, house finch, song sparrow, and reptiles.

4.2.6.6 Conversion of 33.9 Acres of Developed and Landscaped Areas and 6.1 Acres of Annual Grassland Areas to Landscaped Grassland

Restoring the airfield and creating other maintained grassy areas would result in the conversion of 33.9 acres of developed and landscaped areas and 6.1 acres of annual grassland habitat to 40.0 acres of landscaped grassland. This impact is considered less than significant because developed and landscaped areas and annual grassland are common regionally and statewide and do not support special-status species at Crissy Field. Also, the existing developed and landscaped areas have low wildlife value and, overall, the site plan would result in a net increase in native habitats.

4.2.6.7 Temporary Disturbance to and Long-Term Enhancement of Beach Habitat Areas

Rubble removal and beach reconfiguration would be performed along the Crissy Field shoreline to promote natural beach and dune formation processes. Approximately 4,500 linear feet of beach front would be affected by rubble removal. This impact is not considered significant because of the current absence of vegetation and special-status species along the beaches. Although invertebrates using the rubble as cover could possibly be displaced

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and mortality could occur from rubble removal, this impact is not considered significant because there are no special-status species associated with the rubble areas. In addition, the impact would be temporary in duration and current wildlife use of the beach is low because of human disturbance. This action is expected to have a long-term beneficial effect on native beach and dune habitats by creating sites for native plant establishment and wildlife habitat.

4.2.6.8 Removal of Non-Native Trees and Shrubs

The proposed site plan calls for removing some non-native trees and shrubs. The Proposal would include removing approximately 48 palm trees and 10 eucalyptus trees from the airfield area and 10 cypress and 5 palm trees from the East Beach parking area. Palm trees would be relocated to other Presidio or offsite locations. Other existing non-native trees would be retained. Although many of the existing non-native trees would be retained or made available for transplanting to other areas of the Presidio or elsewhere, palm tree removal could affect potential nesting habitat. This impact is considered less than significant because the trees are common non-native species. Other trees would be planted as part of implementing the Proposal, and it is NPS policy to avoid removal of trees during the breeding season.

4.2.6.9 Effects on Fish and Other Aquatic Species

Several special-status fish species could occur in the tidal area along Crissy Field, but none are known to breed there; therefore, there would be no impacts on special-status fish. Restoration of tidal marsh habitat along Crissy Field could benefit fish species in the long term by providing habitat for rearing of juvenile fish, such as Pacific herring, and dungeness crab.

4.2.6.10 Potential for Mosquito Generation

A discussion of this issue is presented in Section 4.2.10, "Impacts on Human Health, Safety, and the Environment".

4.2.7 Transportation Impacts

This impact analysis evaluates the impacts of the Proposal on roadway operations, parking, bicycle and pedestrian travel, and safety.

Crissy Field may experience a slight increase in traffic as a result of increased visitor use because of increased attractiveness and accessibility of the area. However, large-scale events that have historically occurred at Crissy Field will no longer take place there, as established in the GMPA. Also, the site will no longer be used as a large parking lot for other events. Group events and festivals will be small to medium-sized. As noted in the GMPA, large events, such as the Fourth of July Independence Day celebration, that typically generated a large amount of traffic and demand for parking will no longer be held at Crissy Field.

For the reasons described above, the Proposed Action is not expected to result in a substantial increase in traffic on the Crissy Field roadways or affect neighborhood parking. Therefore, the operating conditions of the roadways and intersections within and around Crissy Field are not expected to significantly change from existing conditions.

4.2.7.1 Potential Addition of Traffic to the Roadway System as a Result of Visitor Trips and Construction-Related Trips

Restoration and enhancement of Crissy Field may result in an increase in the number of people visiting and using this site as a result of the increased attractiveness and accessibility of the site and future growth in population and park visitors. Traffic projections for 2000 and 2010 were estimated in the GMPA EIS. The expected increase resulting from the Proposed Action is within these projections. Traffic increases that would result from implementation of the Proposal are not expected to be substantial in relation to the existing number of visitors because the existing land use of park/open space/recreation would not change and does not generate a significant contribution to the projected cumulative traffic increases. The addition of traffic on the existing roadways and intersections resulting from

implementation of the Proposed Action is expected to be less than significant.

Project construction activities are expected to result in additional traffic on the surrounding roadways and intersections. However, this increase would be temporary and small and is considered to be less than significant. Because most of the excavated material would be used onsite, disposal haul trips will be minimized.

4.2.7.2 Changes in Traffic Speeds and Patterns along Mason Street

Under the Proposed Action, Mason Street would be realigned in two locations. In addition, the vehicular lanes on Mason Street would be narrowed from the existing 20-foot lanes to 12-foot lanes.

The realignment and narrowing of Mason Street is expected to result in lower traffic speeds and make this road less attractive as a through-traffic shortcut to the Golden Gate Bridge. This is consistent with the GMPA concept for circulation at Crissy Field, as well as public desires to reduce through-traffic on Mason Street. The addition of traffic on Mason Street through to the West Bluff area would not be substantial because Mason Street would terminate in the parking lot. This impact is considered beneficial.

4.2.7.3 Improvements to the Pedestrian and Bicycle Facilities

The Proposal builds on the existing use of the Promenade by many people as a recreation corridor for activities such as jogging and dog walking. The existing Promenade varies in width from 6 feet to 30 feet. This alternative proposes a uniform width of 20 feet, allowing ample room for walkers, runners, and slow-moving bicyclists. Stabilized aggregate or crushed oyster shell would replace the sporadic mix of asphalt and gravel, providing a consistent surface. The surfacing material would discourage faster moving bicycles from mingling with pedestrians. Mason Street would also be redesigned to include a 10-foot-wide separated bikeway and an 8-foot-wide pedestrian path. These improvements to the Promenade and Mason Street would provide a safer recreation corridor to its users and are considered to be

beneficial. See Section 4.2.2, "Recreation Impacts", for additional discussion of improvements to the Promenade.

4.2.7.4 Improvements to the East Beach Parking Facility

The East Beach parking area is currently arranged in a rectilinear grid of asphalt streets in varying degrees of disrepair. Under the Proposal, the East Beach parking area would continue to provide for vehicular access close to the bay for active recreational users, such as boardsailors, and casual visitors to Crissy Field. The proposed changes to this parking area include the removal of parking pavement along with several existing streets. Approximately 120 oversized surfaced parking spaces are included in the eastern portion of the site plan. The more efficient design allows for more parking in less space than under the current configuration. In addition, parking for 280 vehicles in oversized spacing would be provided on grass. Additional grass space would accommodate rigging and picnicking. Grass parking is consistent with the current use of the East Beach parking area by boardsailors who park on the grass and use it for rigging and staging their equipment. Restroom and shower facilities would be constructed at this location. Improvement of this parking area is considered to be a beneficial impact.

4.2.7.5 Reduction of Total Available Parking for Day-to-Day Use at Crissy Field North of Mason Street

Currently, there are approximately 3,415 marked and unmarked parking spaces at Crissy Field under and north of Doyle Drive, about 1,755 of which are north of Mason Street. Observations of parking use at Crissy Field indicate that peak weekday use generally does not exceed 26% of area available for parking north of Mason Street. This equates to about 460 spaces being used on a peak day. Most of the existing spaces at Crissy Field are not used on a day-to-day basis and are surplus spaces.

The GMPA calls for a total of 1,760 parking spaces within the entire 150-acre greater Crissy Field planning area (including 50 acres outside the current site plan area) by 2010. Under the Proposed Action, about 560 spaces would exist on Crissy Field north of Mason Street and a new 100-car lot would be constructed south of Mason Street. The remaining 1,100 spaces called for in

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the GMPA would be accommodated in existing and new parking areas south of Mason Street. The GMPA identifies several areas south of Mason Street for parking. The locations and sizes of the parking lots shown in the GMPA were conceptual; however, the remainder of the Crissy Field parking requirements can easily be met south of Mason Street. The supply of parking is adequate to ensure that adjacent Presidio neighborhoods are not adversely affected by Crissy Field parking demands. Prime waterfront space would be used for recreation and restoration of natural values rather than expansive parking lots. Because of the existing surplus parking space and existing and future parking supply south of Mason Street, the reduction in parking areas would not be restrictive for day-to-day activities. This impact is considered less than significant.

4.2.7.6 Reduction of Total Available Parking Space at Crissy Field for Special Events

Under the Proposed Action, 560 spaces are planned for the northern portion of Crissy Field north of Mason Street and a new 100-car lot would be constructed south of Mason Street at the east end. As noted in the GMPA EIS, the Presidio has more than enough parking space to accommodate existing facilities and activities within its boundaries. Existing Presidio parking supply is 13,000 spaces and projected future supply is 8,386. The area south of Mason Street, including under Doyle Drive, contains 1,660 spaces now and will provide 1,100 spaces in the future, consistent with the GMPA. Because special events and festivals at Crissy Field will be more moderate in size compared with some past large events (e.g., Fourth of July celebration), parking demand will be reduced.

The Presidio of San Francisco Transportation Demand Management Program recommendations include a comprehensive array of parking management strategies to be implemented through park partner-lease provisions, the GGNRA special event permitting process, Presidio Tenant Association Transportation Management Program policies and activities, and GGNRA administration of park-sponsored activities. These transportation demand management (TDM) measures are recommended to encourage alternative modes of travel and maximize use of the parking spaces that are provided. Special events that could result in overflow parking will be coordinated to ensure that parking supplies are not saturated. Special event schedules will

be based on parking availability, and events will be regulated to ensure that supply meets expected demand. Events requiring large amounts of parking will not be scheduled concurrently with other events if combined parking demand would exceed the available supply within the park. Sponsors may be required to provide special transit services during their events to reduce expected parking demand and promote use of public transit and remote parking lots.

Because of the projected reduction in demand for parking from reduced-scale events at Crissy Field, availability of parking supply south of Mason Street and other Presidio locations, and implementation of the TDM measures, this impact is not considered to be significant.

4.2.8 Air Quality Impacts

The main types of air pollution generated by construction are tailpipe emissions from construction machinery, dust emissions generated by heavy machinery operation on unpaved surfaces, emissions of dust and other particulate matter from earthmoving and grading, and dust emissions from wind erosion of unpaved surfaces and stockpiles. Tailpipe emissions were estimated by multiplying the number of hours of operation of each type of equipment by an emission rate for each pollutant taken from the U.S. Environmental Protection Agency (EPA) document "Compilation of Air Pollutant Emission Factors" (U.S. Environmental Protection Agency 1985). This document contains emission rates for a broad range of pollutant-producing activities. Dust emissions were estimated by multiplying the area expected to be disturbed in any single day of construction by an EPA dust emission rate (U.S. Environmental Protection Agency 1985).

4.2.8.1 Conformity with State Implementation Plans

The federal Clean Air Act mandated the establishment of ambient air quality standards and requires areas that violate these standards to prepare and implement plans to achieve them. These plans are called state implementation plans (SIPs). A separate SIP must be prepared for each nonattainment pollutant. Projects involving federal funding or federal approval are required to show conformity with state implementation plans if they would emit more than a certain level of nonattainment pollutants.

The San Francisco Bay Area is designated as a moderate ozone nonattainment area, and the urban area is designated as a moderate nonattainment area for carbon monoxide (CO). The San Francisco Bay Area is an attainment area for the federal particulate (PM10) standards. The de minimis emission levels are the threshold levels used to determine conformity with the SIPs. These levels are 50 tons per year (tpy) for reactive organic gases (ROG) and 100 tpy for oxides of nitrogen (NO_x) and CO. Because the basin is in attainment for PM10, a threshold for PM10 has not been set. (See Section 3.8, "Air Quality", of "Affected Environment" for a description of criteria pollutants.)

Construction of the project is estimated to result in temporary and intermittent emissions of 2.1 tpy of ROG, 33.2 tpy of NO_x, and 11.6 tpy of CO. Operation of the project is expected to result in emissions similar to those currently generated at the site. Because project-related emissions are below levels requiring a conformity finding, no further analysis of conformity of this project with SIPs is required.

4.2.8.2 Increased Air Pollutant Emissions from Construction Activities

According to the BAAQMD's New Source Review Rule, if a project would emit more than 150 pounds per day (ppd) of ROG, NO_x, or PM10 it is considered to have a significant impact. This project has the potential to result in temporary construction-related emissions equaling 11.7 ppd of ROG, 181.7 ppd of NO_x, and 345.1 ppd of PM10. These estimates are based on the assumption that a typical day of construction would require two graders, two scrapers, two trucks, two tractors, one loader, and one compactor and that 10 acres would be actively worked each day.

Because, under these assumptions, NO_x and PM10 emissions would exceed the BAAQMD threshold level, NPS would require construction contractors to use construction equipment that adheres to stricter emissions standards for NO_x. The ARB has established more stringent emission standards for construction equipment built after 1995. It is expected that this equipment will be commonly used to meet environmental requirements. If construction trucks and heavy-duty diesel equipment used at the construction site meet the 1996 emission standard of 6.9 grams/hp-hour, total NO_x emissions would be

reduced to approximately 126 ppd, which is below the significance threshold. An alternative would be to use standard equipment and reduce the quantity of equipment being operated each day so that NO_x emissions do not exceed the threshold of 150 ppd. This would require eliminating two or three pieces of equipment from the ten pieces assumed for the analysis.

To reduce PM10 emissions, measures would be implemented to reduce fugitive dust emissions. Watering the construction site will reduce fugitive dust emissions by about 50%. However, watering alone will not reduce PM10 emissions to less-than-significant levels. Another dust-control measure is the use of dust palliatives. A dust palliative is an agent to control particulate matter that is usually generated by wind or construction equipment, and is usually applied on the ground. Water or cellulose-based chemical stabilizers are commonly used. Other acceptable materials that may be used include petroleum, resins, asphaltic emulsions, acrylics, and adhesives. These materials are generally accepted as being environmentally safe. These substances can generally provide a 90% reduction of fugitive dust emissions. A combination of watering 75% of the construction site and applying dust palliatives on the remaining 25% would reduce total PM10 emissions to approximately 147 ppd. This quantity is less than the significance threshold of 150 ppd.

Daily covering of exposed areas not undergoing construction activity would also help control particulate emissions.

4.2.8.3 Air Pollutant Emissions from Ongoing Operations at Crissy Field

Implementation of the Proposed Action would result in a similar amount of emissions as from the existing facility. Traffic-related emissions and emissions from routine landscape maintenance are expected to be minor and similar to current levels. Because operation-related emissions under the Proposed Action are expected to be similar to current emissions, this impact is considered less than significant.

4.2.9 Noise Impacts

Noise impacts resulting from activities occurring on a temporary basis, such as project construction activities, are evaluated somewhat differently than permanent noise sources, such as highway traffic noise. Potential for speech interference during the daytime or sleep disturbance at night are the most appropriate criteria for the assessment of temporary noise impacts. As specified in the City of San Francisco's noise ordinance, construction-noise impacts are considered significant if noise levels exceed 80 dBA at a distance of 100 feet during daytime, or are 5 dBA or more higher than ambient noise levels during nighttime.

The potential reaction of the public to a change in noise conditions that results from a project is used as a factor in determining significance of operation-related noise impacts. Research into the human perception of changes in sound level indicates the following (Bies and Hansen 1988):

- a 3-dB change is just perceptible,
- a 5-dB change is clearly perceptible, and
- a 10-dB change is perceived as being twice or half as loud.

These factors and other factors relating to the duration and frequency of project-related noise events are considered when the significance of changes in sound levels is evaluated. In general, a permanent noise level increase of 5 dBA or more would be considered significant.

4.2.9.1 Increased Noise Levels during Construction

Construction would result in increased noise levels from earthmoving and construction activities. The types of construction equipment used for this project will typically generate noise levels of 75-85 dBA at a distance of 50 feet, which equates to 70-80 dBA at a distance of 100 feet, while the equipment is operating (U.S. Environmental Protection Agency 1971, Toth 1979, Gharabegian et al. 1985).

Construction equipment operations can vary from intermittent to fairly continuous, with multiple pieces of equipment operating concurrently. Such

noise levels will not be continuous throughout the day and generally will be restricted to daytime hours.

Noise-sensitive receptors that could be subjected to construction noise include recreational users at Crissy Field and residences at the U.S. Coast Guard station and south of U.S. 101. These residences are clustered in three locations: near Lincoln Boulevard and the San Francisco National Cemetery, near the Army Museum and Lincoln Boulevard, and near the Army Museum and Girard Road. Residences are also located in the area just outside the gate on Marina Boulevard. Temporary noise increases from construction are not usually considered significant impacts on the type of recreational uses that occur at Crissy Field because the recreational users can simply move away from the noise source. The closest residential uses are at least 500 feet from the areas that will undergo construction. These residential areas currently experience relatively high noise levels from traffic on U.S. 101, which would tend to mask construction noise. Construction operations would have to comply with the City of San Francisco's noise ordinance, which limits daytime and nighttime construction noise levels.

Because construction noise would be regulated by the noise ordinance and there is substantial distance between construction areas and residential uses, this impact is considered less than significant.

4.2.9.2 Potential Noise Effects from Ongoing Operations at Crissy Field

Operation of Crissy Field would result in minimal or no increase in noise levels compared with current conditions. The Proposed Action contains no elements that would contribute to increased noise levels. The project would require a similar amount of maintenance activity, including lawn mowing, vegetation trimming, and trash and litter removal as under existing conditions.

Under the Proposal, there would also be greater separation between parking areas and visitors than currently exists, providing a better shield of park users from adjacent noise sources. Shifting the east end of the Promenade out of the storm wave zone would eliminate the need for clearing sand with heavy equipment several times per year (Scheumann pers. comm.). Because

operation of Crissy Field would not result in substantially increased noise levels at any noise-sensitive areas, this impact is considered less than significant.

4.2.10 Impacts on Human Health, Safety, and the Environment

The ongoing remedial actions for hazardous waste sites at Crissy Field are being conducted by the Army with oversight by the State of California and EPA. This program involves extensive investigation, analysis, reporting, and remedial design activities. Therefore, the characterization of contaminated sites, exposure pathways, and potential health risks associated with the Crissy Field site improvements are addressed under regulatory controls separate from the NEPA process of impact disclosure in this EA. With these considerations, this analysis of hazardous waste cleanup activities only provides a context for discussion of issues of concern related to exposure to hazardous waste at Crissy Field associated with use resulting from site improvements made under the proposed site plan. Detailed information about hazardous waste contamination at Crissy Field and the Army's overall Presidio cleanup activities can be obtained by contacting the following:

BRAC Environmental Office
604 East Murray Circle
East Fort Baker
Sausalito, CA 94965

The Army has completed the majority of investigations required to characterize wastes at Crissy Field. A secondary revised draft final RI was completed in November 1995 (Dames & Moore 1995b). Results of the RI were used to support a feasibility study (FS) (Dames & Moore 1996) that describes potential remediation measures available to clean up contaminated areas. A remedial action plan (RAP) and record of decision (ROD) for the preferred alternative will be developed and approved. Remedial actions (RAs) of sites will then proceed. In some instances, interim remedial actions (IRAs) have been implemented to accelerate the cleanup. Implementation of the Crissy Field site plan would follow necessary remedial action.

4.2.10.1 Coordination of Timing of Crissy Field Site Plan Construction Activities with Army Remediation Activities

The timing of implementation of improvements under the Proposed Action will be coordinated such that it does not take place prior to remediation in areas where contamination exists. The Army's cleanup plans are being developed to be consistent with implementation of the GMPA for the Presidio, including areas at Crissy Field. The Army is required to implement mitigation measures and BMPs to ensure that exposure does not occur during the course of the cleanup activities. The risk assessment performed by the Army addressed the potential recreational and worker exposures that could result from plan implementation. The cleanup is being performed to ensure that risks to these receptors as well as ecological receptors are addressed. Institutional controls that need to be in place to protect future park visitors or workers from contamination will be implemented (e.g., fencing, signs, notification to NPS maintenance and construction workers). The risk of human exposure following the remediation is low and precautionary measures will be implemented. The coordination of construction activities for projects at Crissy Field with the timing of Army remediation activities is considered beneficial.

See Section 4.2.5.3 for a discussion of potential exposure of aquatic resources to hazardous substances.

4.2.10.2 Potential for Mosquito Generation

Mosquitos are not expected to pose a nuisance or health problem at Crissy Field. The design of the tidal marsh would minimize mosquito breeding habitat to avoid mosquitos becoming a nuisance. Mosquito production can be minimized by maintaining adequate flushing of the marsh and maintaining a healthy fish population. Implementation of the design will create conditions with efficient flushing and turnover of water and avoid creating stagnant ponds. The continuous tidal flushing and wind that would characterize the marsh would inhibit mosquitos because their larvae cannot thrive under such conditions.

Two mosquito species that have potential to occur in the vicinity, *Aedes dorsalis* and *Aedes squamiger*, only occupy relatively still water pools. Only

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under periods of heavy rain could mosquito habitat be created in isolated pools outside the tidal marsh. Mosquitos, however, are very rare on open coastal systems (Blair pers. comm.). Improved drainage on other portions of the site will eliminate existing areas where water ponds during the rainy season.

4.2.11 Scenic Resource Impacts

Potential effects on scenic resources are considered important because of the important visual resources in the area, such as the Golden Gate Bridge and San Francisco Bay, and because of the number and sensitivity of viewers that use or pass through the site.

4.2.11.1 Enhancement of Existing Views and Provision of New High-Quality Views of the Project Site from within the Site Plan Area

The Proposal includes the removal of deteriorated surfaces, fencing, and asphalt paving. These site changes, as well as the creation of the tidal marsh and dune areas and the restoration of the historic airfield with its grass surface, would substantially enhance existing views by improving the natural parklike character and revealing the historic nature of the project site while, at the same time, opening up new views within the site. Improving the Promenade, and providing new facilities, such as picnic areas, boardwalks, and other interpretive areas within the tidal marsh and airfield areas, will substantially enhance the visual character of and viewing opportunities within the site for visitors. This impact is considered beneficial because new high-quality views within the project site would be provided.

4.2.11.2 Enhancement of Existing Views of the Project Site from Surrounding Areas

The Proposal would also substantially enhance views of the project site from surrounding offsite viewing locations, including the Golden Gate Bridge; Doyle Drive; and, most importantly, the overlook on Lincoln Boulevard. It would substantially enhance existing views by removing visually distractive elements, such as fencing and extensive amounts of asphalt, and improving

the natural parklike character of the project site from surrounding offsite viewing locations and revealing its historic nature. Removing structures from the site would help to visually link the Presidio and the bay by creating a smooth and more natural transition of open space. Dunes along Mason Street and vegetation along the Promenade would screen East Beach parking from views. West Bluff parking would be screened from view by the adjacent landform. This impact is therefore also considered beneficial.

4.2.11.3 Enhancement of Existing Views and Provision of New High-Quality Views of the Surrounding Area from the Project Site

The Proposal would also substantially enhance the expansive quality of views from the project site of the surrounding areas, including such regional landmarks as the Golden Gate Bridge, the Presidio, the bay, and much of the city skyline. Views toward the shoreline from locations in the interior of the site, such as Mason Street, would be enhanced and opened up through removal of fencing that currently obstructs views. Improvements to the Promenade and other recreation facilities along the shoreline and provision of elevated viewing from landforms at the West Bluff and south of the marsh would increase visitor opportunities to view the bay and its scenic resources from Crissy Field. This impact is considered beneficial.

4.2.12 Cumulative Impacts

A cumulative impact is an impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The analysis of cumulative impacts for this Proposed Action is tiered from the cumulative impact analysis conducted for the GMPA EIS. The Proposal would contribute in a minor way to the following cumulative impacts, which were disclosed in the GMPA EIS.

Because of the potential for increased attractiveness of the site to visitors, The Proposal could make a minor contribution to beneficial cumulative effects on the local and regional economy.

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The provision of additional open space and the interpretive and educational aspects of the airfield restoration and tidal marsh would contribute to the rest of the Presidio and GGNRA programming efforts to enhance the scenic quality and expand interpretive, educational, and recreational opportunities for Bay Area residents and visitors.

Because there is a continuing loss of buildings and other historic features of the cultural landscape in the region, including those related to military history, the preservation and enhancement of historic resources that would occur at Crissy Field would have a positive cumulative effect on regional efforts to preserve such resources and their settings.

Implementation of the Proposal could potentially contribute to the cumulative long-term degradation of water quality. Potential impacts from urban runoff could increase incrementally over the long term at Crissy Field as a result of increased recreational use by the public at Crissy Field and the Presidio former main installation areas and expansion of dog use on the site. Urban runoff that develops from the normal use of public places and vehicular traffic on streets and parking lots can contain many substances that degrade water quality, including oils and other petroleum products, pet wastes, detergents, and garbage. Degradation of surface and groundwater could also potentially occur as a result of the discharge of toxic materials to the shallow groundwater and nearshore waters of San Francisco Bay.

This potential cumulative impact of degradation of water quality from urban runoff is considered less than significant because NPS is implementing a stormwater management plan to minimize pollution sources and routes of transport to water, and provide structural and management BMPs for pollution control. NPS would incorporate BMPs that reduce pollution from urban runoff, including oil/water separators and sediment traps in stormwater drainage system. If water quality associated with stormwater discharges is found to exceed applicable criteria, contaminated discharges would be treated further or routed to the City and County of San Francisco (CCSF) combined storm and sewer treatment system. NPS has initiated discussions with the SPCA and dog walker representatives to improve awareness of concerns related to pet waste and has provided and will maintain pet waste removal supplies at the site. With implementation of these measures, the impacts would be considered less than significant because the incremental increase in pollutants would be small relative to existing conditions.

In addition to reducing the potential effects of long-term water quality degradation from runoff by implementing the stormwater management plan and providing structural management BMPs, some of the very basic design elements of the site plan would directly result in beneficial effects on water quality. Specifically, the reduction in the amount of impervious surfaces on the site would result in less runoff into waterways and improve the ability of the area to absorb more runoff. The pretreatment of stormwater discharged into the tidal marsh would also have indirect beneficial effects on water quality. In addition, parking areas would be shifted farther away from the bay, and the use of significant portions of the waterfront as event parking would be eliminated. Future restoration of the Tennessee Hollow riparian corridor and drainage system, as well as other stormwater improvements proposed in the watershed, would also reduce pollutant discharges.

Actions under the Proposal would contribute positively to the efforts of similar projects in the GGNRA region to restore and expand native biological communities. The restoration of northern coastal salt marsh and native dune communities at Crissy Field would contribute to the extent of these important and relatively limited habitats locally, regionally, and statewide. Other local dune restoration projects are being implemented at the Presidio and Fort Funston. Regional and statewide dune restoration projects include those being conducted at the Antioch dunes and along the coast in Humboldt and Monterey Counties. Regional wetland restoration projects include Sonoma Baylands, Montezuma Wetlands, and the Napa River and Coyote Creek restoration projects. This impact is considered beneficial because of the opportunities created for dependent plant and wildlife species in a period when competition for habitat from human-related activities and the existence of invasive exotic species is extremely high and these types of natural communities are declining.

The Proposal may contribute a small amount of traffic to the overall increases expected to be generated by the Presidio. As noted in the GMPA EIS, the traffic increases generated by the Presidio would have an overall adverse cumulative effect on local and regional traffic congestion. However, mitigation measures adopted as part of the GMPA EIS, including the planned parking improvements and development or expansion of alternative modes of transportation, would reduce the impact to a less-than-significant level. The cumulative effects of Doyle Drive reconstruction will be addressed by Caltrans and other affected agencies in future environmental analyses; the

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cumulative effects of ongoing or planned projects other than Doyle Drive reconstruction are not known at this time, but these projects are expected to improve traffic operations overall.

The Proposal would also contribute to short-term impacts on noise levels during project construction, but noise levels would not violate the City of San Francisco noise ordinance.

Implementation of the Proposal would follow completion of Army remediation activities in any given area of the site. If the implementation of this Proposal is phased, construction could occur in some areas concurrent with the Army's remediation work. Cumulative temporary construction effects related to traffic, access, air quality, and noise would be less than significant.

It is also possible that some phases of the Doyle Drive reconstruction or Golden Gate Bridge seismic retrofit projects could undergo construction simultaneously with construction of phases of the Crissy Field site plan project. Cumulative construction impacts could include air quality, noise, and traffic impacts.

4.3 Environmental Consequences of the Dune Alternative

The Dune Alternative would have many of the same environmental consequences as described for the Proposed Action. The primary difference between the two site plan alternatives is the treatment of 20 acres of the central portion of the site. Under the Dune Alternative, a gently rolling landscape vegetated with dune scrub, instead of a tidal marsh, would be constructed. Impacts that would be the same as for the Proposed Action are listed below for each resource topic, along with a discussion of impacts that would be different (specific to the Dune Alternative).

4.3.1 Land Use Impacts

4.3.1.1 Impacts That Are the Same as under the Proposed Action

The following land use impact for the Dune Alternative would be the same as under the Proposal. Refer to Section 4.2.1 for a discussion of this impact.

- Change in Availability of the Helipad

The following discussions disclose land use impacts specific to the Dune Alternative.

4.3.1.2 Consistency with National Park Service Management Policies

The Dune Alternative includes establishment of a stabilized dune area on the central portion of the site, restoration of the historic grass landing strip, restoration of native dune and coastal habitats, and provision of recreation and interpretive facilities for visitors. This alternative adheres to the NPS Management Policies by enhancing and perpetuating native plant life as part

of natural ecosystems. It also preserves and fosters appreciation of cultural resources through treatment and interpretation and provides trails and facilities to assist park visitors in enjoying the park and understanding its significance. This alternative does not include creating and maintaining wetlands; however, the field of stabilized dunes would be graded to create topography that would not preclude construction of a tidal marsh in a future project. This impact is considered beneficial because, compared with existing conditions, this alternative is more consistent with the NPS Management Policies.

4.3.1.3 Consistency with Relevant Land Use Plans and Policies

The Dune Alternative is consistent with relevant land use plans and policies. The GMPA specifies that the design for Crissy Field will incorporate a grass landing strip restored to its historic appearance and stipulates that, based on results of a feasibility study, tidal wetlands should be reestablished toward the east end of Crissy Field (National Park Service 1994). This alternative incorporates all elements and objectives envisioned in the GMPA for Crissy Field, except for creating tidal wetlands on the site. This alternative, however, does not preclude the future construction of a tidal wetland, as described above. However, it is acknowledged that by delaying construction of a tidal marsh to a future phase, resource values and uses could become established in the interim that could result in greater conflict and resource impact than under current conditions.

This alternative is also consistent with policies of the San Francisco Master Plan and the San Francisco Bay Plan. It furthers the objectives stated in the San Francisco Master Plan related to improving shoreline areas, promoting public recreation and open space along the shoreline, and providing habitat for many species. It achieves objectives in the Bay Plan related to protecting the coast as a natural resource; managing the use of the shoreline to best meet the needs of the public; and striving to increase public access to the Bay, while restricting development that would have adverse impacts on the Bay.

This impact is considered beneficial because, compared with existing conditions, the Dune Alternative is generally consistent with the GMPA and furthers the objectives of the San Francisco Master Plan and the San Francisco Bay Plan.

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4.3.2 Recreation Impacts

Table 4-1 in Section 4.2.2 presents a comparison of recreational opportunities for each site plan alternative.

4.3.2.1 Impacts That Are the Same as under the Proposed Action

The following recreation impacts for the Dune Alternative would be the same as for the Proposal. Refer to Section 4.2.2 for a discussion of these impacts.

- Construction/Improvement of Visitor Facilities
- Improvements to the Golden Gate Promenade
- Improved Safety and Amenities for Recreationists along Mason Street
- Temporary Loss of Recreation Use/Access during Construction
- Change in Parking Location at the West End

The following discussion discloses the recreation impact specific to the Dune Alternative.

4.3.2.2 Increase in Total Open Space Area Accessible for Recreation

Under the Dune Alternative, the amount of open space available for multiple recreational activities, (e.g., beach use, bird watching) would increase compared with present conditions. The overall amount of space accessible for these activities under the Dune Alternative (95 acres) would be more than currently exists (66 acres) (Table 4-2). Dog walking would not be allowed in the central area under this alternative. Large areas in the West Bluff improvements area, in the central dune field, on the grass airfield, and along the shoreline and beach area would be opened up and improved to accommodate a variety of recreational activities. This impact is considered beneficial.

4.3.3 Cultural Resources

The following cultural resource impacts would be the same under the Dune Alternative as under the Proposed Action. Refer to Section 4.2.3 for a discussion of these impacts. No additional cultural resource impacts are specific to the Dune Alternative.

- Restoration of Crissy Field Airfield
- Restoration of Old Mason Street
- Construction Activities in the Vicinity of the Old Mason Street Railroad Tracks
- Potential to Disturb Archeological Resources

4.3.4 Geomorphology and Soil Impacts

The following impact related to geomorphology and soils would be the same under the Dune Alternative as under the Proposed Action. Refer to Section 4.2.4 for a discussion of this impact. There are no additional impacts related to geomorphology and soils that are specific to the Dune Alternative.

- Potential Changes in Deposition of Beach Sand Resulting from Removal and Reconfiguration of Bayshore Rubble

4.3.5 Water Resource Impacts

The following discussions disclose impacts related to water resources that are specific to the Dune Alternative.

4.3.5.1 Potential Short-Term Water Quality Impacts Associated with Construction Activities

Construction activities that would be required for Crissy Field site improvements have the potential to cause short-term water quality impacts on

nearshore areas of San Francisco Bay, natural drainageways, or the stormwater system as a result of increased soil erosion and discharges of construction-related materials (e.g., fuels, lubricants, solvents, and cleaners) to surface waters. Construction activities for the Dune Alternative that could disturb and expose soil to forces of erosion include earthmoving and grading operations and road construction. Erosion and related construction impacts could result from various cut, fill, and grading activities for creation of the central dune field; asphalt removal from the existing airfield; and beach restoration and rubble removal along the bay shoreline.

The total amount of soil disturbance for this alternative is estimated to be 92,500 cubic yards. Because the site is relatively flat, the potential for erosion is considered low. Furthermore, the site was not identified as having high or moderate erosion potential in the Presidio of San Francisco Storm Water Management Plan (Dames & Moore 1994). Although the potential for soil erosion during construction is low, NPS will comply with conditions of NPDES general construction activity stormwater permits, including implementing erosion control plans and SWPPPs. Measures used will include BMPs to minimize soil erosion, including structural, management, and vegetation measures. NPS will minimize the discharge of soil and pollutants during excavation by requiring contractors to use measures to contain disturbances within localized areas, including use of turbidity barriers, silt curtains, or equivalent measures. Routine monitoring and reporting of BMP performance will be conducted by the permit holders and NPS pursuant to the NPDES permits. Compliance with the BMPs included in the plans would result in a minimal amount of soil erosion, and discharges of construction-related pollutants would be minimized. This impact is considered less than significant.

4.3.5.2 Potential Contribution to Cumulative Long-Term Water Quality Improvement/Degradation from Urban Runoff

As described in Section 4.2.5 for the Proposed Action, incremental increases in potential impacts from urban runoff could occur over the long term at Crissy Field as a result of increased recreational use by the public at Crissy Field and adjacent Presidio areas. This potential impact is considered less than significant for this alternative because NPS would implement a

stormwater management plan to minimize pollution sources and provide structural and management BMPs for pollution control.

In addition, the reduction in the amount of impervious surfaces on the site would result in less runoff into waterways and improve the ability of the area to handle more runoff. This alternative would not, however, have the additional water quality benefit to nearshore areas of the bay from stormwater contaminant removal in the tidal marsh as "pretreatment", as the Proposed Action would. Under the Dune Alternative, all seven outfalls would be retained and would continue to discharge directly into the bay along the beach.

4.3.6 Biological Resource Impacts

Because no special-status plants are known to exist at Crissy Field and no special-status wildlife species breed there or use the site regularly, the Dune Alternative would not result in any adverse effects on threatened or endangered species. The Dune Alternative would increase the amount of area occupied by natural habitats on the site compared with present conditions. Refer to Table 4-3 for a comparison of habitat acreages under each of the alternatives. Figure 4-2 shows the habitat types that would exist under the Dune Alternative.

4.3.6.1 Impacts That Are the Same as under the Proposed Action

The following biological resource impacts of the Dune Alternative would be the same as for the Proposed Action. Refer to Section 4.2.6 for a discussion of these impacts.

- Conversion of 10.1 Acres of Developed and Landscaped Area and 16.9 Acres of Beach Areas to Native Dune Communities
- Conversion of 0.4 Acre of Annual Grassland and 2.4 Acres of Developed and Landscaped Areas to Dune Scrub in the East Beach Area
- Conversion of 33.9 Acres of Developed and Landscaped Areas and 11.3 Acres of Annual Grassland Areas to Landscaped Grassland

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- Temporary Disturbance to and Long-Term Enhancement of Beach Habitat Areas
- Removal of Non-Native Trees and Shrubs

The related to biological resources described below is specific to the Dune Alternative.

4.3.6.2 Conversion of 12.2 Acres of Developed and Landscaped Areas and 7.8 Acres of Annual Grassland to Dune Scrub in the Central Dune Field

Restoring native dune communities would result in conversion of developed and landscaped areas and annual grassland to habitat. This action is considered beneficial because it would replace non-native habitat with native habitat and would promote the occurrence of native plant and wildlife species.

4.3.7 Transportation Impacts

Under the Dune Alternative, the operating conditions of the roadways and intersections within and around Crissy Field are not expected to significantly change from existing conditions.

The following transportation impacts would be the same under the Dune Alternative as under the Proposal. Refer to Section 4.2.7 for a discussion of these impacts. No additional transportation impacts are specific to the Dune Alternative.

- Potential Addition of Traffic to the Roadway System as a Result of Visitor Trips and Construction-Related Trips
- Changes in Traffic Speeds and Patterns along Mason Street
- Improvements to the Pedestrian and Bicycle Facilities
- Improvements to the East Beach Parking Facility

- Reduction of Total Available Parking for Day-to-Day Use at Crissy Field North of Mason Street
- Reduction of Total Available Parking Space at Crissy Field for Large-Scale Special Events

4.3.8 Air Quality Impacts

The main types of air pollution that would be generated by construction of the Dune Alternative are tailpipe emissions from construction machinery, dust emissions generated by heavy machinery operation on unpaved surfaces, dust emissions from earthmoving and grading, and dust emissions from wind erosion of unpaved surfaces and stockpiles.

4.3.8.1 Conformity with State Implementation Plans

The discussion on federal Clean Air Act conformity for the Proposed Action also applies to the Dune Alternative.

4.3.8.2 Impacts That Are the Same as under the Proposed Action

The following air quality impacts would be the same under the Dune Alternative as under the Proposal. Refer to Section 4.2.8 for a discussion of these impacts. No additional air quality impacts are specific to the Dune Alternative.

- Increased Air Pollutant Emissions from Construction Activities
- Air Pollutant Emissions from Ongoing Operations at Crissy Field

4.3.9 Noise Impacts

The main noise impacts of the Dune Alternative would result from activities occurring on a temporary basis, such as project construction activities.

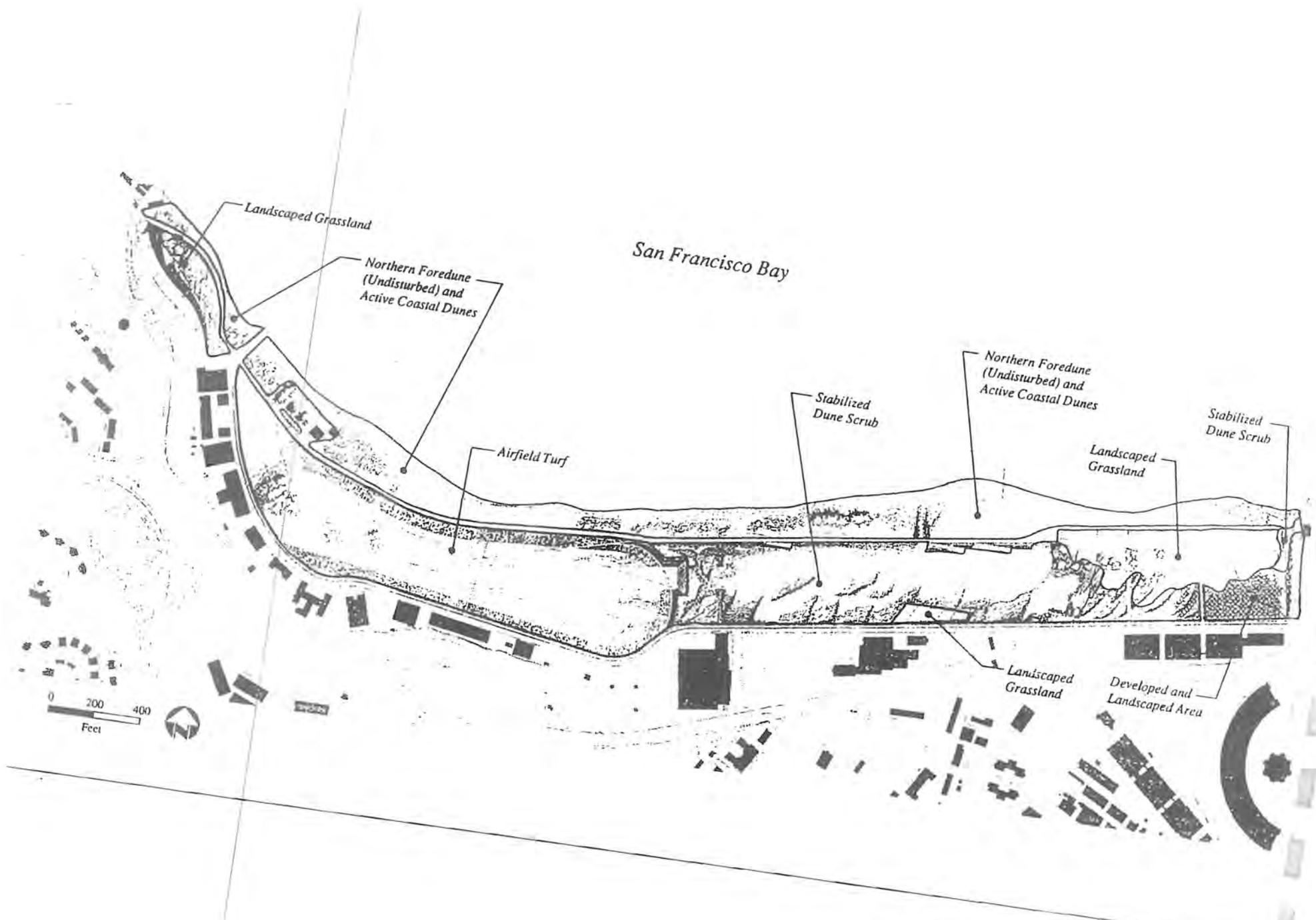


Figure 4-2
Habitat Types under the Dune Alternative

The following noise impacts would be the same under the Dune Alternative as under the Proposed Action. Refer to Section 4.2.9 for a discussion of these impacts. No additional noise impacts are specific to the Dune Alternative.

- Increased Noise Levels during Construction
- Potential Noise Effects from Ongoing Operations at Crissy Field

4.3.10 Impacts on Human Health, Safety, and the Environment

Characterization of contaminated sites, exposure pathways, and potential health risks associated with the Crissy Field site improvements are addressed under regulatory controls separate from the NEPA process of impact disclosure in this EA. As noted for the Proposed Action, the analysis of the Dune Alternative for hazardous waste cleanup activities only provides the context for issues of concern related to exposure to hazardous waste at Crissy Field associated with use resulting from site improvements made under the proposed site plan. Detailed information about hazardous waste contamination at Crissy Field and the Army's cleanup activities can be obtained at the address of the BRAC Environmental Office noted in Section 4.2.10.

The following human health and safety issue would be the same under the Dune Alternative as under the Proposal. Refer to Section 4.2.10 for a discussion of this issue. No additional human health and safety concerns are specific to the Dune Alternative.

- Coordination of Timing of Crissy Field Site Plan Construction Activities with Army Remediation Activities

4.3.11 Scenic Resource Impacts

The following impacts related to scenic quality under the Dune Alternative would be the same as under the Proposed Action. Refer to Section 4.2.11

for a discussion of these impacts. No additional impacts on scenic resources are specific to the Dune Alternative.

- Enhancement of Existing Views and Provision of New High-Quality Views of the Project Site from within the Site Plan Area
- Enhancement of Existing Views of the Project Site from Surrounding Areas
- Enhancement of Existing Views and Provision of New High-Quality Views of the Surrounding Area from the Project Site

4.3.12 Cumulative Environmental Effects

Cumulative effects of the Dune Alternative would be the same as those for the Proposed Action, except that the Dune Alternative's cumulative contribution to regional efforts to enhance and restore native biological communities would be focused on native dune restoration. It would not include the cumulative benefit of restoring wetlands.

4.4 No-Action Alternative

4.1 No-Action Alternative

The No-Action Alternative is a continuation of the existing conditions described in Section 3.0, "Affected Environment" and current management actions for ongoing park operations and to address safety issues. NPS would not implement site improvements and restoration of the natural and cultural resources of Crissy Field and would not implement any new projects other than those that have already been separately programmed or initiated by the Army or NPS (e.g., hazardous waste site remediation and building demolition). The current land uses at Crissy Field would continue most likely at the current levels of intensity. Recreationists would continue to use portions of Crissy Field with limited accessibility, primarily the shoreline areas. Open space areas could be expanded as a result of the building demolition program in progress. These new open space areas would be stabilized with vegetation and provide open space values but would not be improved.

The conceptual planning goals established in the GMPA for the Crissy Field planning area would not be achieved. Furthermore, the No-Action Alternative is not consistent with the NPS Management Policies for recreating, rehabilitating, and maintaining wetlands or fostering the appreciation of cultural resources through treatment and interpretation. The tidal marsh would not be created and the historic airfield would not be restored. The No-Action Alternative is consistent with NPS policies related to perpetuating existing native plant life as part of natural ecosystems and providing trails and facilities for park visitors through existing programs and facilities at Crissy Field that would continue to be maintained.

Under this alternative, none of the adverse or beneficial environmental effects described for the Proposed Action or the Dune Alternative would occur. The following facilities and resources would not be improved:

- Rubble would remain along 4,500 feet of shoreline.
- The Promenade surfaces and alignment would remain as existing.

- Mason Street width and alignment and existing parking would not change.
- Blowing sand would not be controlled by restored and expanded dunes.
- There would be no separated bicycle path and very limited accessibility.
- Maintenance requirements would increase because of building demolition, requiring basic mowing, litter removal, and care.

Section 5.0 Consultation and Coordination

Consultation and Coordination

Many agencies, groups, and individuals were consulted in developing the site plan alternatives and preparing this EA. Section 1.2.4, "Public Involvement and Scoping"; Section 2.5, "Permits and Approvals Required to Implement the Proposal"; and "Personal Communications" in Section 6.0, "Bibliography", provide information on the context of the communications with these agencies, groups, and individuals. This section summarizes coordination with public agencies and the status of compliance of the Proposed Action with their requirements. Letters documenting communication with the San Francisco Bay Conservation and Development Commission (BCDC), the National Marine Fisheries Service (NMFS), and the U.S. Fish and Wildlife Service (USFWS) follow this section.

U.S. Army Corps of Engineers. As noted in Section 2.5, "Permits and Approvals Required to Implement the Proposal", some aspects of the project would require permits from the U.S. Army Corps of Engineers (Corps) to address modification of the shoreline to comply with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. NPS has coordinated informally with the Corps through the Corps-sponsored interagency group meetings. The Crissy Field site plan was presented to this group in 1995 and 1996. After approval of the project proposal, NPS will consult with the Corps to determine the type of Section 404 permit that would apply to the action and prepare appropriate documentation.

U.S. Fish and Wildlife Service and National Marine Fisheries Service. USFWS participated in the interagency meeting held in 1996. Because no threatened or endangered species occur at Crissy Field or would be affected by implementation of the site plan, no formal consultation with USFWS is required. USFWS and NMFS also submitted letters to NPS that included names of special-status plant, wildlife, and fish species that have the potential to occur in the San Francisco area.

U.S. Environmental Protection Agency, Region 9. EPA participated in the interagency meetings held in 1995 and 1996, and the Army's remedial project managers' meetings in which NPS plan alternatives for Crissy Field were discussed.

California Department of Health Services. The California Department of Health Services also participated in the interagency meeting held in 1996.

Bay Conservation and Development Commission. The BCDC submitted an informal letter after the June 13, 1995 public workshop to inform NPS that the site plan alternatives being considered are consistent with local coastal plan designations. The BCDC also participated in the 1995 and 1996 interagency meetings. After approval of the project proposal, NPS will prepare a formal consistency determination for submittal to the BCDC to comply with the federal Coastal Zone Management Act and the McAteer-Petris Act.

Advisory Council on Historic Preservation and California Office of Historic Preservation. NPS signed a programmatic agreement (PA) in October 1994 with the ACHP and the SHPO. The PA covers all actions described in the GMPA, including the Crissy Field site plan, as well as operation and maintenance activities.

San Francisco Regional Water Quality Control Board. NPS has informally coordinated with the San Francisco RWQCB in meetings of the Army's remedial project managers, as well as at an onsite briefing in 1996 and in ongoing discussions regarding the Army's environmental remediation program and its relationship to the NPS plans for Crissy Field.

Native American Groups. Native American tribe representatives were identified through consultations for the GMPA EIS and subsequently through contact with the Native American Heritage Commission. Because no known prehistoric sites or resources would be affected by this project, formal consultations have not been initiated. A summary of the plan and notice of availability of the EA has been sent to identified tribal representatives. In the event of discovery of prehistoric sites or burials, consultation would be initiated as noted in Section 4.2.3.6.

Preservation Groups. Several interest groups supporting historic preservation were included in the scoping process and have been sent notices of availability of this EA. Groups include the San Francisco Landmarks Preservation Board, the Fort Point and Presidio Historical Association, the American Aviation Historical Society, the National Trust for Historic Preservation, and the American Institute of Architects.

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

THIRTY VAN NESS AVENUE, SUITE 2011
 SAN FRANCISCO, CALIFORNIA 94102-6080
 PHONE: (415) 557-3686

July 7, 1995

Golden Gate National Recreation Area
 Fort Mason, Building 201
 San Francisco, California 94123

ATTENTION: Nancy Hornor

SUBJECT: Design Alternatives for Crissy Field

Ladies and Gentlemen:

We have reviewed the four alternatives for reconstruction of Crissy Field that were presented at a Golden Gate National Recreation Area workshop on June 13, 1995. We are writing informally at this time to inform you that, based on the information presented, the Commission could find any of the four proposed alternatives to be generally consistent with the federally-approved coastal management program for the San Francisco Bay segment of the California coastal zone, and specifically with the McAteer-Petris Act, the San Francisco Bay Plan and its designation of Crissy Field as a waterfront park priority use area.

We would appreciate, however, the opportunity to review and comment on the Environmental Assessment for this project when it is issued. Please send a copy of the EA to my attention.

Very sincerely yours,



STEVE A. McADAM
 Acting Executive Director

SAM/CR/gg

Dedicated to making San Francisco Bay better.



UNITED STATES DEPARTMENT OF COMMERCE
 National Oceanic and Atmospheric Administration
 NATIONAL MARINE FISHERIES SERVICE
 Southwest Region
 777 Sonoma Ave., Rm 325
 Santa Rosa, CA 95404

December 11, 1995 F/SW031:GRS

Mr. Edward Whisler
 Wildlife Biologist
 Jones and Stokes Associates, Inc.
 2600 V Street, Suite 100
 Sacramento, California 95818-1914

Dear Mr. Whisler:

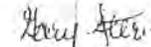
This letter is in response to your request of November 15, 1995 to Mr. Jim Lecky regarding the presence of Federally listed threatened or endangered species or critical habitat that may occur on or near Crissy Field at the Presidio of San Francisco, California.

Available information indicates that the endangered Sacramento River winter-run chinook salmon may occur at the proposed project site. The site is also located within the designated critical habitat for winter-run chinook salmon (58 FR 33212). Coho salmon have been proposed for Federal listing as threatened (60 FR 38011) and may occur in the project area. In addition, chinook salmon and steelhead may occur in the project area and NMFS is currently conducting a status review pursuant to the Endangered Species Act for these species throughout their range in California, Oregon, Idaho, and Washington.

The U.S. Fish and Wildlife Service (USFWS) may also have listed species or critical habitat under its jurisdiction in the project area. Please contact Mr. Joel Medlin, Field Supervisor, USFWS, at 2800 Cottage Way, Room E-1803, Sacramento, California 95925, or (916) 978-4613, regarding the presence of listed species or critical habitat under USFWS jurisdiction that may be affected by your project.

If you have questions concerning these comments, please contact Ms. Penny Ruelas of my staff at (707) 575-6062.

Sincerely,



Gary Stern
 Supervisory Fishery Biologist

cc: R. Craig Wingert, NMFS





United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Sacramento Field Office
2600 Cottage Way, Room E-1803
Sacramento, California 95825

IN REPLY REFER TO:

1-1-96-TA-135

November 8, 1995

Ms. Vicki Lake
Jones & Stokes Associates, Inc.
2600 V Street, Suite 100
Sacramento, California 95818

Subject: Species List for Proposed Projects on Crissy Field, Presidio
of San Francisco, San Francisco, California

Dear Ms. Lake:

The enclosed list replies to your letter of November 1, 1995, requesting information on listed and proposed endangered and threatened species that may be present in or may be affected by projects in the subject project area (see Enclosure A). Information concerning the distribution, life history, and habitat requirements for the listed species is available upon request.

The Fish and Wildlife Service (Service) used your map(s) and/or other information to locate the proposed project on a U.S. Geological Survey (USGS) 7.5 minute quadrangle map. The species on the enclosed list are those species we believe may occur within the USGS San Francisco North quad, where your project is planned. Some of the species may not be affected by the proposed action. A trained biologist or botanist, familiar with the habitat requirements of the listed species, should determine whether these species or habitats suitable for these species may be affected by the proposed action.

Information and maps concerning candidate species in California are available from the California Natural Diversity Data Base, a program of the California Department of Fish and Game. Address your request to: Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814 [(916) 324-0562]. You also should request information from the Chief, California Department of Fish and Game, Non-Game Heritage Program (916) 324-8348.

All listed species identified in Enclosure A are fully protected under the mandates of the Endangered Species Act of 1973, as amended (Act). Section 9 of the Act and its implementing regulations prohibit the "take" of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such wildlife species. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

LPCDRAV/LTR

Ms. Vicki Lake

Take incidental to an otherwise lawful activity may be authorized by one of two procedures. If a Federal agency is involved with the permitting, funding, or carrying out of this project, then initiation of formal consultation between that agency and the Service pursuant to Section 7 of the Act is required if it is determined that the proposed project may affect a federally listed species. Such consultation would result in a biological opinion that addresses anticipated effects of the project to listed and proposed species and may authorize a limited level of incidental take. If a Federal agency is not involved with the project, and federally listed species may be taken as part of the project, then an "incidental take" permit pursuant to section 10(a) of the Act should be obtained. The Service may issue such a permit upon completion by the permit applicant of a satisfactory conservation plan for the listed species that would be affected by the project.

If suitable habitat for federally listed species exists in the project area, we recommend that surveys for them be undertaken by qualified biologists during or prior to the environmental review process. We also recommend that surveys be undertaken for the proposed and candidate species included in Enclosure A if suitable habitat exists on site. The results of these surveys should be published in any environmental documents prepared for this project.

Should these surveys determine that federally listed or proposed species occur in the area and are likely to be affected by the proposed project, the Service recommends that the project proponent, in consultation with this office and the California Department of Fish and Game, develop a plan that mitigates for the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. The mitigation plan also should be included in the environmental document.

We also recommend addressing adverse impacts to candidate species. One of the benefits of considering these species early in the planning process is that exploring alternatives, it may be possible to avoid conflicts that could develop, should a candidate species become listed before the project is complete.

We appreciate your concern for endangered species. If you have further questions, please call Michael Thabault of this office at (916) 979-2725. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 979-2113. For questions concerning the endangered winter-run chinook salmon or the proposed threatened coho salmon, please contact the National Marine Fisheries Service's Protected Species Management Division, (310) 980-4011.

Sincerely,

Patricia Leonard
For Joel A. Medlin
Field Supervisor

Enclosure

LPCDRAV/LTR

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN OR BE AFFECTED BY PROJECTS IN THE AREA OF THE FOLLOWING SELECTED QUADS

Reference File No. 1-1-96-TA-135
November 6, 1995

QUAD : 466C SAN FRANCISCO NORTH

Listed Species

Mammals

salt marsh harvest mouse, *Reithrodontomys raviventris* (E)

Birds

American peregrine falcon, *Falco peregrinus anatum* (E)

California brown pelican, *Pelecanus occidentalis californicus* (E)

California clapper rail, *Rallus longirostris obsoletus* (E)

western snowy plover, *Charadrius alexandrinus nivosus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

Fish

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

winter-run chinook salmon crit. habitat, *Oncorhynchus tshawytscha* (E)

Delta smelt, *Hypomesus transpacificus* (T)

Invertebrates

mission blue butterfly, *Icaricia icariodes missionensis* (E)

San Bruno elfin butterfly, *Incisalia mossii bayensis* (E)

Plants

Presidio manzanita, *Arctostaphylos hookeri ssp. ravenii* (E)

marsh sandwort, *Areneria paludicola* (E)

Presidio clarkia, *Clarkia franciscana* (E)

beach layia, *Layia camosa* (E)

Marin dwarf-flax, *Hesperolinon congestum* (T)

Proposed Species

Amphibians

California red-legged frog, *Rana aurora draytoni* (PE)

Fish

Coho salmon, *Oncorhynchus kisutch* (PT)

Sacramento splittail, *Pogonichthys macrolepidotus* (PT)

Plants

San Francisco lessingia, *Lessingia germanorum* (PE)

Candidate Species

Mammals

greater western mastiff-bat, *Eumops perotis californicus* (2)

long-eared myotis bat, *Myotis evotis* (2)

fringed myotis bat, *Myotis thysanodes* (2)

long-legged myotis bat, *Myotis volans* (2)

Yuma myotis bat, *Myotis yumanensis* (2)

San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (2)

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE SPECIES THAT MAY OCCUR IN OR BE AFFECTED BY PROJECTS IN THE AREA OF THE FOLLOWING SELECTED QUADS

Reference File No. 1-1-96-TA-135
November 6, 1995

QUAD : 466C SAN FRANCISCO NORTH

Candidate Species

Mammals

Pacific western big-eared bat, *Plecotus townsendii townsendii* (2)

Point Reyes jumping mouse, *Zapus trinotatus orarius* (2)

Birds

tricolored blackbird, *Agelaius tricolor* (2)

Bell's sage sparrow, *Amphispiza belli belli* (2)

ferruginous hawk, *Buteo regalis* (2)

little willow flycatcher, *Empidonax traillii brewsteri* (2)

saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (2)

black rail, *Leterallus jamaicensis* (2)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (2)

southwestern pond turtle, *Clemmys marmorata pallida* (2)

California horned lizard, *Phrynosoma coronatum frontale* (2)

Amphibians

California tiger salamander, *Ambystoma californiense* (1)

foothill yellow-legged frog, *Rana boylei* (2)

Fish

longfin smelt, *Spirinchus thaleichthys* (2)

Invertebrates

Opler's longhorn moth, *Adella oplerella* (2)

sandy beach tiger beetle, *Cicindella hirticollis gravida* (2)

globose dune beetle, *Coelus globus* (2)

Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (2)

bumblebee scarab beetle, *Lichnanthe ursina* (2)

Plants

San Francisco manzanita, *Arctostaphylos hookeri ssp. franciscana* (2)

San Francisco Bay spineflower, *Chorizanthe cuspidata var. cuspidata* (2)

San Francisco gumplant, *Grindelia hirsutula var. maritima* (2)

Kellogg's (wedge-leaved) horkelia, *Horkelia cuneata ssp. sericea* (2)

adobe sanicle, *Sanicula maritima* (2)

Marin checkermallow, *Sidalcea hickmanii ssp. viridis* (2)

Mission Delores campion, *Silene verecunda ssp. verecunda* (2)

San Francisco owl's-clover, *Triphysaria floribunda* (2)

San Francisco popcornflower, *Plagiobothrys diffusus* (2*)

alkali milk-vetch, *Astragalus tener var. tener* (2R)

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CANDIDATE
SPECIES THAT MAY OCCUR IN OR BE AFFECTED BY PROJECTS IN THE AREA OF
THE FOLLOWING SELECTED QUADS
Reference File No. 1-1-96-TA-135
November 8, 1995

Notes:

- (E) Endangered (T) Threatened (P) Proposed (CH) Critical Habitat
- (1) Category 1: Taxa for which the Fish and Wildlife Service has sufficient biological information to support a proposal to list as endangered or threatened.
- (2) Category 2: Taxa for which existing information indicated may warrant listing, but for which substantial biological information to support a proposed rule is lacking.
- (1R) Recommended for Category 1 status.
- (2R) Recommended for Category 2 status.
- () Listing petitioned.
- (*) Possibly extinct.

Section 6.0

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Appendix A
Plant and
Wildlife Species

Table A-1. Native Plant Species That Occur or May Be Used in Restoring Dune and Other Areas at Crissy Field

Scientific Name	Common Name	Scientific Name	Common Name
Northern Dune Scrub			
<i>Abronia latifolia</i> *	Coastal sand verbena	<i>Cirsium quercetorum</i>	Oak thistle
<i>Abronia umbellata</i> *	Sand verbena	<i>Claytonia perfoliata</i>	Miner's lettuce
<i>Achillea millefolium</i>	White yarrow	<i>Croton californicus</i>	California croton
<i>Ambrosia chamissonis</i> *	Beach bur	<i>Cryptantha leiocarpa</i>	Cryptantha
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	Rancher's fire	<i>Danthonia californica</i>	California oatgrass
<i>Amsinckia spectabilis</i>	Seaside fiddleneck	<i>Daucus pusillus</i>	Wild carrot
<i>Artemisia californica</i>	California sagebrush	<i>Dichelostemma congestum</i>	Ookow
<i>Atriplex leucophylla</i>	Beach saltbrush	<i>Dudleya farinosa</i>	Coast live-forever
<i>Baccharis pilularis</i> *	Coyote brush	<i>Ericameria ericoides</i>	Heather goldenbush, mock heather
<i>Bromus carinatus</i> var. <i>maritimus</i>	Seaside brome	<i>Erigeron glaucus</i>	Seaside daisy, beach fleabane
<i>Camissonia cheiranthifolia</i> ssp. <i>cheiranthifolia</i> *	Beach primrose	<i>Eriogonum latifolium</i>	Coast buckwheat
<i>Camissonia contorta</i>	Broadleaf sun cups	<i>Eriophyllum staechadifolium</i>	Seaside woolly sunflower
<i>Camissonia micrantha</i>	Small primrose	<i>Erysimum franciscanum</i>	San Francisco wallflower
<i>Camissonia ovata</i>	Sun cup	<i>Eschscholzia californica</i> *	California poppy
<i>Cardionema ramosissimum</i>	Sand mat	<i>Festuca rubra</i>	Red molate fescue
<i>Carex brevicaulis</i>	Short-ligule sedge	<i>Gilia capitata</i> var. <i>chamissonis</i>	Dune gilia
<i>Carex obnupta</i>	Slough sedge	<i>Gnaphalium purpureum</i>	Purple everlasting
<i>Castilleja affinis</i>	Coastal paintbrush	<i>Gnaphalium ramosissimum</i>	Cudweed
<i>Castilleja wightii</i>	Wight's paintbrush	<i>Heracleum lanatum</i>	Cow parsnip
<i>Chenopodium californicum</i>	California goosefoot	<i>Hesperovax sparsiflora</i>	Evax
<i>Chlorogalum pomeridianum</i> var. <i>divaricatum</i>	Common soap plant	<i>Hesperolinon californicum</i>	California dwarf flax
<i>Chorizanthe cuspidata</i>	San Francisco Bay spineflower	<i>Iris douglasiana</i>	Douglas' iris
<i>Cirsium occidentale</i>	Cobweb thistle	<i>Lepidium nitidum</i> *	Common peppergrass

Table A-1. Continued

Scientific Name	Common Name	Scientific Name	Common Name
<i>Lessingia germanorum</i>	Lemmon's lessingia	<i>Piperia elegans</i>	Elegant bog orchid
<i>Leymus xvancoverensis*</i>	Leymus	<i>Plantago erecta</i>	California plantain
<i>Linaria canadensis</i>	Blue toadflax	<i>Plantago maritima</i>	Pacific seaside plantain
<i>Lotus scoparius</i>	Deerweed	<i>Poa douglasii</i>	Douglas' bluegrass
<i>Lotus wrangelianus</i>	Lotus	<i>Polygonum paronychia</i>	Knotweed
<i>Lupinus albifrons</i>	Silver bush lupine	<i>Polypodium californicum</i>	California polypody fern
<i>Lupinus arboreus*</i>	Yellow bush lupine	<i>Quercus agrifolia</i>	Coast live oak
<i>Lupinus bicolor</i>	Bicolored lupine	<i>Rubus ursinus</i>	California blackberry
<i>Lupinus chamissonis*</i>	Chamisso bush lupine	<i>Rumex salicifolius*</i>	Willow dock
<i>Lupinus nanus*</i>	Douglas' lupine	<i>Scrophularia californica</i>	California figwort
<i>Lupinus variicolor</i>	Many-colored lupine	<i>Sidalcea malvaeflora</i>	Checker bloom
<i>Marah fabaceus</i>	Man-root	<i>Silene verecunda</i> var. <i>verecunda</i>	San Francisco campion
<i>Microseris bigelovii</i>	Bigelow's microseris	<i>Solidago spathulata</i>	Coast goldenrod
<i>Mimulus aurantiacus</i>	Salmon monkeyflower	<i>Tanacetum camphoratum</i>	Dune tansy
<i>Oenothera elata</i> var. <i>hookeri</i>	Hooker's evening primrose	<i>Toxicodendron diversilobum</i>	Poison-oak
<i>Phacelia californica</i>	California coast phacelia	<i>Trifolium wormskioldii</i>	Cows clover
<i>Phacelia malvifolia</i>	Stinging phacelia	<i>Vicia gigantea</i>	Giant black vetch
<i>Phacelia ramosissima</i> var. <i>ramosissima</i>	Branching phacelia	<i>Wyethia angustifolia</i>	Narrowleaf mule-ears
Transitional			
<i>Agoseris aparigioides</i> var. <i>aparigioides</i>	North coast seaside dandelion	<i>Castilleja wightii</i>	Wight's paintbrush
<i>Ambrosia chamissonis</i>	Beach bur	<i>Dudleya farinosa</i>	Coast live-forever
<i>Artemisia pycnocephala</i>	Beach sagewort	<i>Erigeron glaucus</i>	Seaside daisy, beach fleabane
<i>Bromus carinatus</i> var. <i>maritimus*</i>	Seaside brome	<i>Eriogonum latifolium</i>	Coast buckwheat
<i>Camissonia cheiranthifolia</i> ssp. <i>cheiranthifolia</i>	Beach primrose	<i>Eschscholzia californica</i>	California poppy

Table A-1. Continued

Scientific Name	Common Name	Scientific Name	Common Name
<i>Leymus triticoides</i>	Creeping wildrye	<i>Poa douglasii</i>	Douglas' bluegrass
<i>Lotus scoparius</i>	Deerweed	<i>Polygonum paronychia</i>	Knotweed
<i>Lupinus chamissonis</i>	Chamisso bush lupine	<i>Tanacetum camphoratum</i>	Dune tansy
<i>Phacelia distans</i>	Wild heliotrope		
Northern Foreduces			
<i>Abronia latifolia</i>	Coastal sand-verbena	<i>Eriophyllum staechadifolium</i> var.	Seaside woolly sunflower
<i>Abronia umbellata</i>	Sand verbena	<i>Erysimum franciscanum</i>	San Francisco wallflower
<i>Achillea millefolium</i>	White yarrow	<i>Eschscholzia californica</i>	California poppy
<i>Ambrosia chamissonis</i>	Beach bur	<i>Festuca rubra</i>	Red fescue
<i>Artemisia pycnocephala</i>	Beach sagewort	<i>Fragaria chiloensis</i>	Beach strawberry
<i>Atriplex leucophylla</i>	Beach saltbrush	<i>Leymus mollis</i>	American dunegrass
<i>Baccharis pilularis</i>	Coyote brush	<i>Leymus xancouverensis</i> ^a	Leymus
<i>Camissonia cheiranthifolia</i> ssp. <i>cheiranthifolia</i>	Beach primrose	<i>Linaria canadensis</i>	Blue toadflax
<i>Camissonia contorta</i>	Broadleaf sun cups	<i>Lotus scoparius</i>	Deerweed
<i>Camissonia micrantha</i>	Small primrose	<i>Lupinus albifrons</i>	Silver bush lupine
<i>Cardionema ramosissimum</i>	Sand mat	<i>Lupinus chamissonis</i>	Chamisso bush lupine
<i>Carex obnupta</i>	Slough sedge	<i>Lupinus variicolor</i>	Manycolor lupine
<i>Chenopodium californicum</i>	California goosefoot	<i>Marah fabaceus</i>	Man-root
<i>Chorizanthe cuspidata</i>	San Francisco spineflower	<i>Microseris bigelovii</i>	Bigelow's microseris
<i>Claytonia perfoliata</i>	Red miner's lettuce	<i>Oenothera elata</i> var. <i>hookeri</i>	Hooker's evening primrose
<i>Croton californicus</i>	California croton	<i>Plantago maritima</i>	California plantain
<i>Cryptantha leiocarpa</i>	Cryptantha	<i>Poa douglasii</i>	Douglas' bluegrass
<i>Ericameria ericoides</i>	Goldenbush	<i>Polygonum paronychia</i>	Knotweed
<i>Erigeron glaucus</i>	Seaside daisy, beach fleabane	<i>Solidago spathulata</i>	Coast goldenrod
<i>Eriogonum latifolium</i>	Coast buckwheat	<i>Tanacetum camphoratum</i>	Dune tansy

Table A-1. Continued

Scientific Name	Common Name	Scientific Name	Common Name
Airfield			
<i>Bromus carinatus</i> var. <i>maritimus</i>	Seaside brome	<i>Hordeum brachyantherum</i>	Meadow barley
<i>Elymus glaucus</i>	Blue wildrye	<i>Poa douglasii</i>	Dune bunchgrass
<i>Festuca californica</i>	California fescue	<i>Poa unilateralis</i>	San Francisco bluegrass
<i>Festuca rubra</i>	Red molate fescue		
Upland Areas (Native Shrubs and Herbaceous Perennials)			
<i>Achillea millefolium</i>	Yarrow	<i>Eriophyllum staechadifolium</i>	Seaside woolly sunflower
<i>Artemisia pycnocephala</i>	Beach sagewort	<i>Mimulus aurantiacus</i>	Sticky monkeyflower
<i>Baccharis pilularis</i>	Coyote brush	<i>Rhamnus californica</i>	Coffeeberry
<i>Eriogonum latifolium</i>	Coast buckwheat		
Central Coast Riparian and Salt Marsh			
<i>Aesculus californica</i>	California buckeye	<i>Salicornia bigelovii</i>	Annual pickleweed
<i>Deschampsia caespitosa</i> ssp. <i>holciformis</i>	Coastal hairgrass	<i>Salicornia virginica</i>	Perennial pickleweed
<i>Heteromeles arbutifolia</i>	Toyon	<i>Salix lasiolepis</i>	Arroyo willow
<i>Hordeum brachyantherum</i>	Meadow barley	<i>Satureja douglasii</i>	Yerba buena
<i>Lonicera involucrata</i> var. <i>ledebouril</i>	Twinberry	<i>Scirpus robustus</i>	Alkali bulrush
<i>Myrica californica</i>	Wax myrtle	<i>Spartina foliosa</i>	Cordgrass
<i>Rubus ursinus</i>	California blackberry	<i>Trifolium wormsoldii</i>	Clover
<p>* Hybrid between <i>Leymus mollis</i> and <i>L. iriticoides</i>.</p> <p>* Observed at Crissy Field.</p>			

Table A-2. Bird Species That May Use Existing or Created Habitats at Crissy Field

Common Name	Scientific Name	Common Name	Scientific Name
Northern Dune Scrub			
Herring gull	<i>Larus argentatus</i>	Western gull*	<i>Larus occidentalis</i>
Killdeer*	<i>Charadrius vociferus</i>		
Tidal Marsh			
American coot	<i>Fulica americana</i>	Marbled godwit	<i>Lemosa fedoa</i>
American avocet	<i>Recurvirostra americana</i>	Northern pintail	<i>Anas acuta</i>
Bufflehead	<i>Bucephala albeola</i>	Northern shoveler	<i>Anas clypeata</i>
Dunlin*	<i>Calidris alpina</i>	Ruddy duck	<i>Oxyura jamaicensis</i>
Forster's tern	<i>Sterna forsteri</i>	Sanderling*	<i>Calidris alba</i>
Great blue heron	<i>Ardea herodias</i>	Snowy egret	<i>Egretta thula</i>
Great egret	<i>Casmerodius albus</i>	Song sparrow	<i>Melospiza melodia</i>
Herring gull	<i>Larus argentatus</i>	Western grebe*	<i>Aechmophorus occidentalis</i>
Killdeer*	<i>Charadrius vociferus</i>	Western gull*	<i>Larus occidentalis</i>
Lesser scaup	<i>Aythya affinis</i>	Western sandpiper*	<i>Calidris mauri</i>
Mallard	<i>Anas platyrhynchos</i>	Willet*	<i>Catoptrophorus semipalmatus</i>
Northern Foredunes			
Dunlin*	<i>Calidris alpina</i>	Sanderling*	<i>Calidris alba</i>
Forster's tern	<i>Sterna forsteri</i>	Western gull*	<i>Larus occidentalis</i>
Herring gull	<i>Larus argentatus</i>	Western sandpiper*	<i>Calidris mauri</i>
Killdeer*	<i>Charadrius vociferus</i>	Willet*	<i>Catoptrophorus semipalmatus</i>

Table A-3. Fish Species That May Use Existing or Created Habitats at Crissy Field

Common Name	Scientific Name
Arrow goby	<i>Clevelandia ios</i>
Bat ray	<i>Myliobatis californica</i>
Bay pipefish	<i>Syngnathus leptorhynchus</i>
Jack mackerel	<i>Trachurus symmetricus</i>
Jacksmelt	<i>Atherinopsis californiensis</i>
Leopard shark	<i>Triakis semifasciata</i>
Northern anchovy	<i>Engraulis mordax</i>
Pacific herring	<i>Clupea harengus</i>
Pacific sardine	<i>Sardinops sagax</i>
Rubberlip surfperch	<i>Rhacochilus taxotes</i>
Shiner surfperch	<i>Cymatogaster aggregata</i>
Spiny dogfish	<i>Squalus acanthias</i>
Staghorn sculpin	<i>Leptocottus armatus</i>
Surfsmelt	<i>Hypomesus pretiosus</i>
Threespine stickleback	<i>Gasterosteus aculeatus</i>
Topsmelt	<i>Atherinops affinis</i>
Yellowfin goby	<i>Acanthogobius flavimanus</i>

Table A-2. Continued

Common Name	Scientific Name	Common Name	Scientific Name
Upland Areas (Native Shrubs and Herbaceous Perennials)			
Northern harrier	<i>Circus cyaneus</i>	White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>		
Central Coast Riparian			
Allen's hummingbird	<i>Selasphorus sasin</i>	Ruby-crowned kinglet	<i>Regulus calendula</i>
Anna's hummingbird	<i>Calyte anna</i>	Song sparrow	<i>Melospiza melodia</i>
Bushtit	<i>Psaltriparias minimus</i>	Yellow-rumped warbler	<i>Dendroica coronata</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>		
* Observed at Crissy Field.			

Table A-4. Selected Estuarine Invertebrates That May Use Existing or Created Habitats at Crissy Field

Common Name	Scientific Name
Red tube worm	<i>Capitella capitata</i>
Nephtyid polychaete	<i>Nephtys</i> sp.
Spionid polychaete	<i>Polydora brachycephala</i>
Spionid polychaete	<i>Streblospio benedicti</i>
California horn snail	<i>Cerethidia californica</i>
Gem clam	<i>Gemma gemma</i>
Bent-nosed clam	<i>Macoma nasute</i>
Soft-shelled clam	<i>Mya arenaria</i>
Japanese littleneck	<i>Tapes japonica</i>
Barnacles	<i>Balanus</i> spp.
Skeleton shrimp	<i>Caprella californica</i>
Mud-burrowing amphipod	<i>Corophium</i> spp.
Tube-dwelling amphipod	<i>Ampelisca milleri</i>
Tube-dwelling amphipod	<i>Grandidierella japonica</i>
Bay shrimp	<i>Crangon franciscorum</i>
Dungeness crab	<i>Cancer magister</i>
Mud crab	<i>Hemigraspus oregonensis</i>
Purple shore crab	<i>Hemigraspus nudus</i>
Brine flies	<i>Ephydriidae</i> spp.

H.P's copy



United States Department of the Interior

NATIONAL PARK SERVICE
Golden Gate National Recreation Area
Fort Mason, San Francisco, California 94123

IN REPLY REFER TO

L75 (GOGA-RMPPC)

OCT 02 1996

Dear Reviewer:

Enclosed is a copy of the Crissy Field Plan Staff Report and Finding of No Significant Impact (FONSI). The FONSI completes the environmental review process for this project.

We would like to thank you for your participation in this process and acknowledge the contributions of the public, and other agencies and organizations in helping to shape this plan to reflect both the needs of the community as well as the broader objectives of the Presidio General Management Plan Amendment. The Crissy Field Plan creates a vision that strikes a balance between recreational, ecological and cultural resource enhancements while accomodating the current users of the site and retaining its wild and open character.

If you have questions about this document or the environmental review process, please contact Park Planner Nancy Hornor at (415) 556-4137.

Sincerely,

Brian O'Neill
General Superintendent

Robert Chandler
General Manager, Presidio Project

cc: CGNRA Advisory Commission

FINDING OF NO SIGNIFICANT IMPACT CRISSY FIELD PLAN

This Finding of No Significant Impact (FONSI) has been prepared for implementation of the National Park Service's (NPS) proposed Crissy Field Plan at the Presidio of San Francisco in the Golden Gate National Recreation Area (GGNRA).

The FONSI is based on the analysis of impacts associated with development of Crissy Field discussed in the Crissy Field Environmental Assessment (EA), dated June 1996, and input received during the public scoping and comment periods. Comments received during the public review period for the EA are summarized and responded to in a Staff Report, dated September 1996. The EA, Staff Report and the Presidio General Management Plan Final EIS, which the Crissy Field EA tiers off of, are incorporated by reference, as supporting documents for this FONSI.

PROPOSED ACTION

The NPS proposes to develop an approximately 100 acre portion of Crissy Field, generally including the site from Mason Street north to the shoreline of San Francisco Bay, consistent with the planning area concept described for Crissy Field in the approved Presidio General Management Plan Amendment (GMPA).

The proposal includes improvements to the Golden Gate Promenade and Mason Street, coastal dune restoration; restoration of the 1920's historic grass airfield; visitor amenities such as picnic facilities, parking, trails, overlooks, restrooms, and rigging areas for boardsailing equipment; removal of rubble on the beach; improvement of shoreline protection; and construction of a 20 acre tidal marsh.

Improvements to the Mason Street/Marina Boulevard intersection, implementation of a water shuttle dock at the Coast Guard Station, changes to traffic on Crissy Field Avenue, use of the historic hangar buildings, and other improvements south of Mason Street which are identified in the GMPA are outside of the scope of this action. They are functionally independent of this proposal and their future implementation would not be precluded by this action.

PUBLIC REVIEW

The proposed action was presented at the June 19, 1996 meeting of the GGNRA Advisory Commission. A 45 day public review period ended on August 15, 1996. Verbal comments were received at the July 17, 1996 Advisory Commission meeting. More than 290 written and verbal comments were received and were evaluated and responded to in a Staff Report, which was presented at the September 18, 1996 meeting of the GGNRA Advisory Commission.

In a unanimous vote, the Advisory Commission recommended approval of the proposed action

and completion of a FONSI. A summary of the comments and responses is included in the Staff Report.

ALTERNATIVES

The EA considered a Dune Alternative and a No Action Alternative. The dune alternative includes a stabilized dune field on the central portion of the site instead of a tidal marsh. The EA also included discussion of several alternatives which were considered but rejected, through the public scoping process, as well as through additional analysis during preparation of the EA. These alternatives were rejected because they were not considered feasible or would not result in fewer environmental impacts than the proposal. The proposed action is the most consistent with the concept identified in the GMPA and best balances competing needs and uses.

ENVIRONMENTAL EFFECTS

Following is a summary which briefly presents the reasons why the proposed action will not have a significant impact on the human environment. A more detailed analysis supporting this conclusion is included in the EA and Staff Report.

Environmental effects of the alternatives were evaluated in the EA, including impacts on land use, recreation, cultural resources, geomorphology and soil, water resources, biological resources, transportation, air quality, noise, human health, safety and the environment, scenic resources and cumulative impacts. Analysis in the EA determined that there would not be significant impacts to land use because the proposed action is consistent with relevant plans and policies, and the change in availability of the helipad is less than significant because other options exist to accommodate the relatively small existing routine medical emergency use. Impacts to recreation were determined to be minor and temporary inconveniences or improvements over existing conditions. Changes to the configuration of the shoreline through removal of rubble and construction of a tidal marsh channel were found not to have significant impacts. Biological impacts were found to be less than significant because of the improvement over existing conditions, the design elements to avoid conflict, and the replacement of disturbed or lost natural habitats. No special status species would be affected. Transportation impacts, including cumulative traffic impacts and changes in parking were found to be less than significant because adequate parking, consistent with the GMPA, is provided, and because of mitigation incorporated into the proposal and in the GMPA EIS to reduce traffic and manage parking. Impacts to human health, safety and the environment as a result of implementation of the plan will not be significant because NPS will coordinate plan implementation with the Army's environmental remediation, and other mitigation measures are incorporated into the proposed action.

Implementation of the Crissy Field Plan would not result in significant adverse impacts on the environment, because the project design avoids impacts and the plan incorporates mitigation measures for potential adverse impacts.

In addition to mitigation incorporated into the proposed action and identified in the EA, the GMPA EIS identified a number of mitigation measures that are relevant to the Crissy Field plan. To address traffic and transportation systems, NPS committed to ongoing monitoring of traffic and travel modes, development and implementation of a comprehensive travel demand management program to reduce traffic growth, pursuing improvements to transit service, and development and implementation of a parking management program. These mitigation measures are underway. The GMPA EIS also incorporated mitigation to protect archeological resources, reduce construction impacts including noise and air quality and protect biological resources.

FINDING

In response to comments received during the public review period, as well as public input received at the September 18 GGNRA Advisory Commission meeting, NPS has further considered the range of alternatives, the significance of the potential impacts that may be generated by the proposed action, and the possible need to prepare a supplemental site specific environmental impact statement (SEIS) for the implementation of the Crissy Field Plan. Based on this detailed review, as reflected in the September, 1996 Staff Report and the June, 1996 EA, NPS concludes that appropriate alternatives to the proposed plan have been analyzed, and that the proposal will not generate any significant new or different environmental impacts requiring preparation of an SEIS.

The proposed Crissy Field Plan does not constitute an action which would normally require the preparation of an Environmental Impact Statement. It is tiered off of and is consistent with the GMPA/FEIS, which previously analyzed and provided mitigation for impacts on traffic and transportation systems, the National Historic Landmark District, archeology, air quality, noise, and human health, safety and the environment.

The proposal will not have a significant impact on the human environment. There are no significant unmitigated adverse impacts on public health, public safety, threatened or endangered species, sites listed on the National Register of Historic Places or other unique characteristics of the region. Implementation of the action will not violate any federal, state or local law. Therefore, in compliance with the National Environmental Policy Act, an Environmental Impact Statement will not be prepared.

Approved:

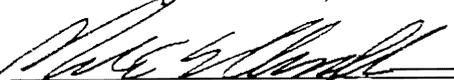


2 October 1996

Brian O'Neill

Date

General Superintendent, Golden Gate National Recreation Area



10/2/96

Robert Chandler

Date

General Manager, Presidio Project

**CRISSY FIELD FONSI
IMPACT/MITIGATION MATRIX**

This Impact/Mitigation Matrix includes impacts identified in the Crissy Field Environmental Assessment that require mitigation. It does not repeat mitigation already identified in the General Management Plan Amendment/Environmental Impact Statement.

Land Use Impacts

Phase out of helipad use for emergencies not related to the operation of the park.

The NPS will work with the City of San Francisco to identify other options to accommodate emergencies not related to the operation of the park. NPS will continue to consult and work collaboratively with the S.F. Planning Department, Emergency Management Services Agency, the Office of Emergency Services and other emergency response organizations to assist them in their efforts to effect a smooth transition from the routine use of Crissy Field as a helipad.

Recreation Impacts

Impacts associated with off-leash dog use.

NPS will work with the SPCA and dog walker representatives to begin an active education program as soon as possible.

NPS will enforce voice control and clean up requirements, and will monitor the results of these efforts. This information will be periodically re-evaluated and management adjustments made where necessary, bringing any proposed changes in off leash dog access to the Advisory Commission.

Impacts to Cultural Resources

Potential to affect unknown archeological resources and cultural resources sites.

Documentary research and test excavations will be conducted in the location of the historic Quartermaster wharves and prehistoric site CA-SAR-6 to assist in identifying and avoiding significant remains at these sites during project implementation. NPS will implement the archeological monitoring program designed in accordance with the 1994 Programmatic Agreement. In the event of discovery of either prehistoric sites or burials, consultation would be initiated immediately with appropriate Native American groups in accordance with the National Historic Preservation Act and the Native American Graves Protection and Repatriation Act.

Construction activities in the vicinity of the Old Mason Street railroad tracks.

The location of the buried tracks is known; they will be avoided during construction. The tracks will be covered with asphalt or soil to protect them from future disturbance.

Geomorphology and Soils

Potential for siltation and closure of the tidal marsh inlet channel.

NPS will monitor conditions and periodically mechanically excavate accumulated sand, if necessary.

If future maintenance frequency of the marsh channel becomes problematic, NPS will address construction of a culverted channel in a separate environmental document which evaluates other alternatives including expansion of the marsh or allowing it to become intermittently tidal.

Geomorphology and Soils
(continued)

Potential changes in shoreline configuration resulting from removal and reconfiguration of bayshore rubble and construction of tidal marsh inlet channel.

Rubble will be retained or replaced with engineered structures where needed for shore protection. The existing outfall at the East Beach will be replaced with a groin structure to protect the beach.

Water Resources

Potential exposure of aquatic organisms in the tidal marsh to hazardous substances in shallow groundwater.

If the tidal marsh were to be closed for longer than several days, the NPS would monitor conditions and, if necessary, perform mechanical maintenance to open the channel to ensure adequate tidal flushing and dilution of remaining contamination to negligible concentrations.

Cleanup of contaminated areas at Crissy field is the obligation of the Army. The Army will monitor contaminant levels in the project area. If levels are found to exceed risk criteria, the Army will identify and implement appropriate corrective measures, such as constructing subsurface barriers, impermeable soil caps, or interceptor drains.

(See mitigation under Human Health, Safety and the Environment).

Potential short-term water quality impacts associated with construction activities.

The NPS will comply with the conditions of the National Pollution Discharge Elimination System (NPDES) general construction activity stormwater permits, including implementing erosion control plans and stormwater pollution prevention plans. Routine monitoring and reporting of BMP performance will be conducted by NPS pursuant to the NPDES permits.

Biological Resource Impacts
Potential land use conflict between intense visitor use areas and natural habitat of the created marsh within the proposed site plan area.

The design incorporates features (barrier fencing, dense vegetation, location of boardwalks, self-closing gates, etc.) that will reduce potential user/value conflicts.

Loss of 2.6 acres of foredunes.

Native plants will be salvaged where feasible and native dune communities will be restored.

Removal of non-native trees and shrubs.

Palm trees will be relocated to other Presidio or offsite locations. Other tree species will be planted during implementation of the project. Tree removal will avoid bird nesting season.

Transportation Impacts
Potential addition of traffic to the roadway system as a result of visitor trips and construction-related trips.

The expected increase in visitor trips to the project site is within the traffic projections analyzed in the Presidio GMPA\EIS. The design incorporates traffic calming features including narrower lanes and curves on Mason Street.

Monitoring of cut through traffic on Mason Street will continue, to confirm the success of traffic calming features in the proposed design. As a separate action, the NPS will give serious consideration to other measures to further reduce traffic on Mason Street, such as directional changes or closure of Crissy Field Avenue.

Transportation Impacts
(continued)

NPS will continue ongoing monitoring of traffic and travel modes, development and implementation of a comprehensive Travel Demand Management (TDM) program to reduce traffic growth, pursuing improvements to transit service, and development and implementation of a comprehensive parking management program to support TDM and transit objectives while minimizing parking related impacts to the park and its neighbors.

Reduction of total available parking for day-to-day use at Crissy Field north of Mason Street (during and post project construction).

Temporary parking areas will be identified. Construction activities are expected to be sequenced so as not to occur at the same time.

NPS will continue to develop and implement a parking management plan which will include special event parking. Design details, including signage, will be developed to provide for appropriate separation of recreational space and parking at East Beach to assure that the intended parking for 400 vehicles is accommodated. Other appropriate management strategies will be developed as needed.

**Transportation Impacts
(continued)**

Reduction of total available parking space at Crissy Field for special events.

Event sponsors may be required to provide special transit services during their events to reduce expected parking demand and promote the use of public transit and remote parking lots. NPS will continue to develop and implement a Travel Demand Management program and a parking management plan which will include special event parking. Design details, including signage, will be developed to provide for appropriate separation of recreational space and parking at East Beach to assure that the intended parking for 400 vehicles is accommodated.

Air Quality

Increased air pollutant emissions from construction activities.

NPS will require construction contractors to use construction equipment that adheres to stricter emissions standards for No_x or reduce the number of pieces of equipment being operated each day.

Measures will be implemented to reduce fugitive dust emissions including: watering the construction site, use of dust pallatives, and daily covering of areas not undergoing construction activity.

Noise Impacts

Increased noise levels during construction.

Construction operations will comply with the City of San Francisco's Noise Ordinance, which limits day and night time construction noise levels.

Impacts on Human Health,
Safety and the Environment.
Potential exposure of humans
and/or tidal marsh aquatic
life to hazardous substances.

NPS will coordinate timing of implementation with Army remediation efforts. NPS construction activities will follow the Army's remediation activities where necessary.

New information regarding the Army's cleanup program will be evaluated as it becomes available to determine if significant new impacts would result. Additional environmental analysis and public review will be performed, if necessary.

NPS will continue to work with State and Federal regulators and the Army in the detailed design phase of the plan to coordinate plan implementation with cleanup, and to identify any additional modifications/mitigation.

NPS will request the Army to maintain emergency funds and capability to respond to such discoveries.

If necessary, the NPS will require the contractor performing plan implementation to have the capability to handle hazardous waste.

NPS will review the final Remedial Investigation Report in consultation with regulatory agencies to ensure that there are no new impacts that have not been addressed in the Environmental Assessment. Any new impacts will be addressed and mitigated where possible.

Impacts on Human Health,
Safety and the Environment
(continued).

During the design phase, NPS will perform additional independent analyses as needed.

NPS will develop a Contingency Plan to address how hazardous substances encountered during the construction phase will be handled.

NPS will develop a Health and Safety Plan for the project to address worker safety during construction.

Potential for mosquito generation/rodent problems.

The tidal marsh will include design features to minimize mosquito breeding habitat, to maintain adequate flushing, to prevent stagnation of water, and to maintain a healthy fish population.

NPS will continue to work with mosquito abatement districts during the design phase of the marsh to identify appropriate monitoring and a contingency/response plan to address any future mosquito or rodent issues in the unlikely event that they arise.

Crissy Field Environmental Assessment

Staff Report

Introduction

This Staff Report is an interim step in the National Environmental Policy Act (NEPA) process between the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) or Notice of Intent (NOI) to prepare and Environmental Impact Statement (EIS). Although not a specific NEPA requirement, the Staff Report facilitates the public and Golden Gate National Recreation Area (GGNRA) Advisory Commission involvement in the decision making process, and has often been used by GGNRA when an EA is prepared for a project for which there is strong public interest.

It includes the following:

1. Summary of the public comment, both written comments and verbal testimony from the July 17 Advisory Commission meeting.
2. Identification of issues raised by public comment, where Advisory Commission action is appropriate or which influence the decision regarding whether to adopt the proposed action, and whether to conclude this process with a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS.
3. Discussion of the issues, including response/clarification or recommendation for resolution such as a modification to the design or incorporation of additional mitigation.
4. The staff's recommendation to the decision maker, GGNRA General Superintendent Brian O'Neill, regarding whether an EIS is required, which alternative should be chosen, and modifications to the project which should be added based on public comment.

SUMMARY OF PUBLIC COMMENT

Following is a summary of public comment on the Crissy Field Environmental Assessment (EA,) received during the 45 day public comment period which ended on August 15, 1996, including comments from the July 17 meeting of the GGNRA Advisory Commission as well as written comments. Comments were received from 58 agencies and organizations and 233 individuals. (Note: there is some overlap in comments from individuals, since a few people presented both written and oral comments).

As indicated in this summary, the proposed plan was strongly endorsed by the public, with a majority of the comments indicating overall support for the entire plan or selected plan elements. Concerns were raised on some plan components, particularly related to traffic and parking, the tidal marsh, the width of the bike path, dog walking, and environmental remediation.

General support for proposed action

39 agencies/organizations
198 individuals

Raising concerns on specific plan issues or not stating a preference for an alternative	18 agencies/organizations 22 individuals
Supporting the Dune Alternative	1 organization
Supporting the No Action Alternative	5 individuals
Opposing the tidal marsh	8 individuals

Agencies and Organizations Offering General Support of the Proposed Plan

American Aviation Historical Society
American Institute of Architects
American Society of Landscape Architects
California Alpine Club
California Department of Fish and Game
California Native Plant Society
California Waterfowl Association
Ducks Unlimited, Inc.
Energy Foundation
Environmental Forum of Marin
Exploratorium
Foundation for San Francisco's Architectural Heritage
Golden Gate Audubon Society
Independent Documentary Group
International Urban Estuary Network
KQED Center for Education and Lifelong Learning
League of Women Voters, San Francisco
Marin Audubon Society
Marin Conservation League
Mission Creek Conservancy
Mount Diablo Audubon Society
National Audubon Society
National Parks and Conservation Association
National Trust for Historic Preservation
Presidio Heights Association of Neighbors
Public Trust Group
San Francisco Bay Joint Venture
San Francisco Boardsailing Association
San Francisco Park and Open Space Advisory Committee
San Francisco Planning Department
San Francisco Planning and Urban Research Association
Save San Francisco Bay Association
Sierra Club, Marin and San Francisco chapters and Presidio Task Force
Three Circles Center for Multicultural Environmental Education
U.S. Fish and Wildlife Service (Ecological Services and Wildlife Refuge)
U.S. Windsurfing Association

Agencies and Organizations Supporting the Dune Alternative

Cow Hollow Association

Agencies and Organizations Commenting on Specific Plan Issues/ No Stated Preference for an Alternative

Arc Ecology (environmental remediation)

Bicycle Community Project (widen bike path)

~~Bicycle Mass~~-(widen bike path)

California Department of Transportation (traffic)

California Environmental Protection Agency, Department of Toxic Substances Control (environmental remediation)

Council on America's Military Past (oppose wetlands, greater focus on airfield)

Department of the Army, DLI and Presidio of Monterey (airfield restoration/interpretation)

Department of the Army, BRAC Environmental Office (environmental restoration)

Fort Point/Presidio Historical Association (interpretation of airfield history, design of airfield restoration)

Marina Civic Improvement and Property Owners Association (impact of traffic and parking on neighborhood)

Marin/Sonoma Mosquito and Vector Control District (mosquito control)

Marina Neighborhood Association (impacts of off-leash dogs)

Preserve the Marina Campaign (traffic impacts on Marina)

San Francisco Bicycle Coalition (widen bike path)

San Francisco County Transportation Authority (Doyle Drive reconstruction schedule)

St. Francis Yacht Club (parking and sedimentation of yacht harbor)

SF Bureau of Environmental Health Management (mosquitos)

SF Planning Department/Office of Environmental Review (traffic impacts, helipad, GMPA consistency, impacts to SF Yacht Club/harbor and neighborhood)

ISSUES

Issues were identified based on:

1. NEPA relevance: comments addressing the adequacy of the document, range of alternatives, necessity to prepare an EIS.
2. Comments or questions which indicated clarification regarding information in the EA was desirable.
3. Comments which by their frequency indicated a strong public interest or concern.
4. Comments which affect the decision regarding adoption of the proposed action or the substantive policy choice to be made by the National Park Service.

ISSUES RELATED TO THE SCOPE OF THE EA AND THE NEPA PROCESS

Some commenters raised NEPA issues addressing the scope of the EA or the need to prepare an EIS. The specific NEPA issues raised in these comments are addressed below. Other NEPA issues raised in public comments are addressed by topic of concern in the following sections.

1. Improper tiering and need for an EIS.

One individual stated that the EA was improperly tiered from the EIS because the commenter felt that the beneficial impacts of the project were significant and in the commenter's view an EIS should have been prepared. CEQ regulations allow for tiering of environmental documents. A site specific environmental analysis can be

tiered from a broader environmental impact statement such as the GMPA/EIS. Impacts related to the proposed action were identified and discussed, and mitigation identified in the GMPA/EIS. As provided for in the CEQ regulations, this EA was prepared to determine whether a supplemental, site specific EIS is required. No significant new, greater or different impacts have been identified which were not previously addressed in the GMPA/EIS. Accordingly, staff believes that a site specific EIS is not required.

2. Range of alternatives

Several commenters questioned the adequacy of the range of alternatives evaluated in the EA, specifically stating that additional NEPA evaluation was, in their opinion, required or desirable. These comments focused on the following alternatives:

Larger Planning Area. One commenter suggested that the alternative of a plan for the entire 150 acre site was not properly excluded. In section 2.4.1, the EA identified several reasons why this alternative was considered but rejected. NEPA allows the screening of alternatives and in tiering from a broader programmatic document, selection of smaller, site specific alternatives. The entire area was addressed from a NEPA perspective in the GMPA EIS as a conceptual alternative, and the EA confirms the compatibility of this first phase of implementation with full implementation of the concept as in the approved GMPA. The proposed action evaluated in the EA is functionally independent and does not preclude options for later actions in the portion of the site south of Mason Street. This alternative would not have fewer environmental impacts than the alternatives evaluated in the EA.

Freshwater Marsh. An individual commenter suggested that the alternative of a freshwater marsh should be fully discussed. The EA, in 2.4.2 discusses the rationale for excluding a freshwater marsh from further consideration, citing the analysis in the 1995 Feasibility Study which identified several reasons that this alternative was found not to be feasible. This alternative would not have fewer environmental impacts than the alternatives evaluated in the EA, and was properly eliminated from further consideration.

Sever Mason Street. The Sierra Club suggested that the EA should have provided alternatives to eliminate cut through traffic on Mason Street and believed that cut through traffic on Mason Street has significant noise and air quality impacts. Sierra Club Presidio Task Force and 16 individuals suggested closing Mason Street to through traffic west of the commissary.

Cut through traffic on Mason Street is an existing condition and the EA does not suggest any change to Mason Street which would result in new or significant impacts. Impacts of noise and air quality were evaluated in the GMPA/EIS, which includes the retention of Mason Street as a through route. Monitoring of cut through traffic on Mason Street shows that it is not significant. The EA in section 2.4.3 discusses the rationale for rejecting the alternative which would not allow through automobile traffic on Mason Street. This conclusion was based on a traffic impact analysis referenced in the EA which concluded that elimination of through traffic on Mason Street would result in significant impacts to traffic on Lincoln Boulevard. Since this alternative would have greater environmental impact, it was properly eliminated from further consideration. A further clarification of the impacts of this suggestion which resulted in its being rejected is included in the discussion of traffic issues in this staff report.

Close Marina Gate to All Automobile Traffic. Marina Civic Improvement and Property Owners Association (MCIPOA) stated that the EA was not adequate because it did not evaluate an alternative which would close the Marina gate to all automobile traffic. MCIPOA incorrectly states that the Marina gate was historically closed to public automobile traffic. This alternative was not suggested during the scoping process for this EA, or during the GMPA/EIS process. It would not be consistent with the GMPA/EIS and in itself is likely to have impacts which would be significant. MCIPOA further supports the consideration of this alternative in an amended EA or EIS as mitigation for what it feels are unmitigated and unanalyzed cumulative impacts to Marina Boulevard as a small contribution to traffic

including commute and residential traffic (see #3 below). The traffic and parking section of this staff report provides a more specific response to the traffic and parking issues raised by this comment. This alternative would have greater environmental impacts than the alternatives addressed in the EA, and is not considered feasible. Staff recommends against amending the EA or preparing an EIS to further analyze this alternative.

3. Failure to address cumulative traffic impacts/ impacts to Marina neighborhood.

Preserve the Presidio Campaign stated that impacts to the Marina neighborhood were not adequately addressed and that an EIS should be prepared. Marina Civic Improvement and Property Owners Association (MCIPOA) also stated that the EA was inadequate because of its failure to disclose and mitigate cumulative traffic impacts to Marina Boulevard.

The GMPA/EIS included both an analysis of and mitigation for traffic impacts, including cumulative traffic impacts, to neighborhoods outside of the Presidio boundary. The EA incorporates by reference the GMPA/EIS and supporting documents including the Presidio Transportation Planning and Analysis Technical Report. The EA, in section 4.2.12 and 4.3.12 also addresses cumulative impacts. No new significant, greater or different impacts were identified that were not previously addressed in the GMPA/EIS. The specific traffic concerns raised in these comment letters are addressed in the traffic section of this staff report.

4. Consistency with San Francisco Master Plan

Marina Civic Improvement and Property Owners Association (MCIPOA) states that the EA is inadequate because it fails to discuss impacts to the SF Master Plan. Consistency with the SF Master Plan is addressed in the EA at 3.1.3.3. Although not specifically addressed in the EA, consistency with the Transportation Element policy cited by MCIPOA, "to reduce impacts of automobile traffic in and around parks and along shoreline recreation areas", is accomplished through the mitigation included in the GMPA/EIS and in the traffic calming features of the proposed plan such as narrowing traffic lanes and altering the alignment of Mason Street, provision of a separate bike path, as well as through the screening provided in the proposed plan by vegetation and landforms.

5. An EIS should be prepared.

MCIPOA, Preserve the Presidio Campaign and one individual specifically state that, in their opinion, an EIS is required for the Crissy Field Plan. The following reasons were cited by one or more of these commenters:

Commenter felt that significant beneficial impacts would result. There are no new significant beneficial environmental impacts not already addressed in the GMPA/EIS.

Commenter felt that a significant resource (Marina Green) would be impacted by the proposed plan. There are no impacts to Marina Green beyond those disclosed in GMPA/EIS.

In the commenter's view, traffic and parking impacts on Marina Boulevard are controversial. We do not agree that traffic impacts associated with the proposed plan are controversial, or that there are significant new impacts not previously addressed in the GMPA/EIS.

Commenter felt that a precedential decision is involved. We do not agree with the commenter that the proposed plan sets a precedent regarding future decisions related to the Marina/Mason/Lyon/Doyle Drive intersection, Doyle Drive reconstruction or other traffic patterns, beyond the precedent already set in the decisions in the GMPA and already evaluated in the EIS. In defining the planning area from Mason Street north, NPS has retained flexibility regarding future decisions for this area.

An EIS is required to address cumulative traffic impacts to Marina Boulevard and include mitigation. This is addressed above and in the traffic/parking section of Staff Report.

6. The NEPA Process was flawed:

MCIPOA stated that the NEPA process was flawed because a 1995 planning schedule indicated that the process would conclude with a FONSI. The comment acknowledged that the EA clearly states that the process could conclude either with a FONSI or a Notice of Intent to prepare and EIS. We feel that the process was not flawed in this regard and that NPS was fully aware that the analysis in the EA could result in a decision to prepare an EIS.

~~Conclusion: Careful consideration of the NEPA issues raised confirms that they have been adequately addressed in the EA or in the GMPA/FEIS which is incorporated by reference in the EA. The range of alternatives analyzed in detail in the EA properly excludes those suggested by the commenters.~~

TRAFFIC AND PARKING

Traffic and parking concerns, including confusion regarding information in the EA were expressed by several commenters. Transportation was a major part of the GMPA planning effort and influenced many of the decisions reflected in the final plan.

Analysis of the alternatives in the Crissy Field EA included a confirmation of GMPA/EIS land use assumptions which were the basis for projections of traffic in the years 2000 and 2010, and concluded, as noted in the EA, that traffic associated with the alternatives in the EA were within these projections.

The issues identified by staff, or information requiring clarification include the following:

1. **The EA should have evaluated an alternative to eliminate rather than reduce cut through traffic on Mason Street.** Many individuals as well as Sierra Club Presidio Task Force (SCPTF), Presidio Heights Association of Neighbors and National Parks and Conservation Association (NPCA) noted concerns about cut through traffic (traffic on Mason Street not destined for Crissy Field, but using Crissy Field as an alternative route to other destinations, primarily the Golden Gate Bridge). Many of these commenters suggested ending Mason Street at the commissary and a few suggested closing Crissy Field Avenue to motor vehicles.

Marina Civic Improvement and Property Owners Association (MCIPOA) suggested closing the Marina gate to all automobile traffic, incorrectly stating that the Marina gate has been historically closed to automobile traffic. The Marina gate was a predominantly open gate under military operation, closing only for periods of emergency (war) or for operational needs, including night time closure during some periods.

The EA cites a 1992 through-traffic analysis which indicated that eastbound pass-through traffic is very light, and westbound traffic is also very light except during periods of significant congestion westbound on Doyle Drive. The GMPA commits to periodic monitoring of traffic to assess impacts and benefits of implementing the plan. The GMPA also commits to keeping all existing entrances open, to maintain an equitable distribution of traffic. A 1996 traffic count shows that all Presidio gateways carry some degree of pass-through traffic. The data shows that under normal conditions, 8% of westbound Mason weekday traffic (7% on weekends) passes through the Presidio to the Golden Gate Bridge. Only 2% of eastbound Mason traffic passes through from the bridge to the Mason gateway (weekdays and weekends). Changes to Mason Street proposed in the Crissy Field Plan are designed to slow traffic and discourage its use as a pass-through route, further minimizing its already low percentage of pass-through traffic.

All of the traffic studies and analyses conducted to date for Presidio planning indicate that closure of any park entrance would be undesirable because it would shift significant amounts of traffic onto adjacent entrance routes. For example, closure of the Marina gate would be expected to adversely affect the Gorgas and Lombard entrances, as well as many of the nearby routes to and from the gates, both inside and outside the park boundaries. Traffic models and the accompanying analyses also clearly indicate that closure of any of the major routes within the Presidio will have the undesirable effect of shifting significant traffic loads onto adjacent roadways. As a result,

closure of Mason Street near the commissary, as considered but rejected in the Crissy Field EA, would create adverse impacts to Lincoln Boulevard and several connecting streets and intersections. The traffic impacts analysis for Crissy Field, cited in the EA, clearly indicated that the resulting impacts to Lincoln Boulevard would be very serious, adversely affecting bicycle and pedestrian traffic in addition to auto traffic.

Crissy Field Ave. is outside the scope of the proposed action, however the proposed plan does not preclude modifications, such as those identified in the GMPA to change the direction of traffic flow to further reduce cut through traffic. Monitoring of cut through traffic on Mason Street will continue, to confirm the success of traffic calming features in the proposed design. As a separate action, NPS will give serious consideration to other measures to further reduce traffic on Mason Street, such as directional changes or closure of Crissy Field Avenue.

2. Lyon/Mason/Marina/Doyle Drive intersection safety concerns. Several commenters including St. Francis Yacht Club, NPCA, and several individuals urged a more proactive role on the part of NPS in resolving the issue of safety improvements at this intersection.

Although this intersection lies largely outside of NPS boundaries and authority, and is outside the scope of the proposed action, NPS will take a proactive role in working with the City to identify interim safety improvements which can be implemented pending a more comprehensive, long term design solution. In addition, during the design development, NPS will explore additional safety improvements to Mason Street which can be made as part of this plan.

3. Impact of Crissy Field improvements on Marina Boulevard Traffic. MCIPOA commented that Crissy Field users contribute to significant cumulative traffic impacts on Marina Boulevard traffic and that the plan and EA do not mitigate this impact. Suggested mitigation focused on the closure of the Mason St. gate to automobile traffic.

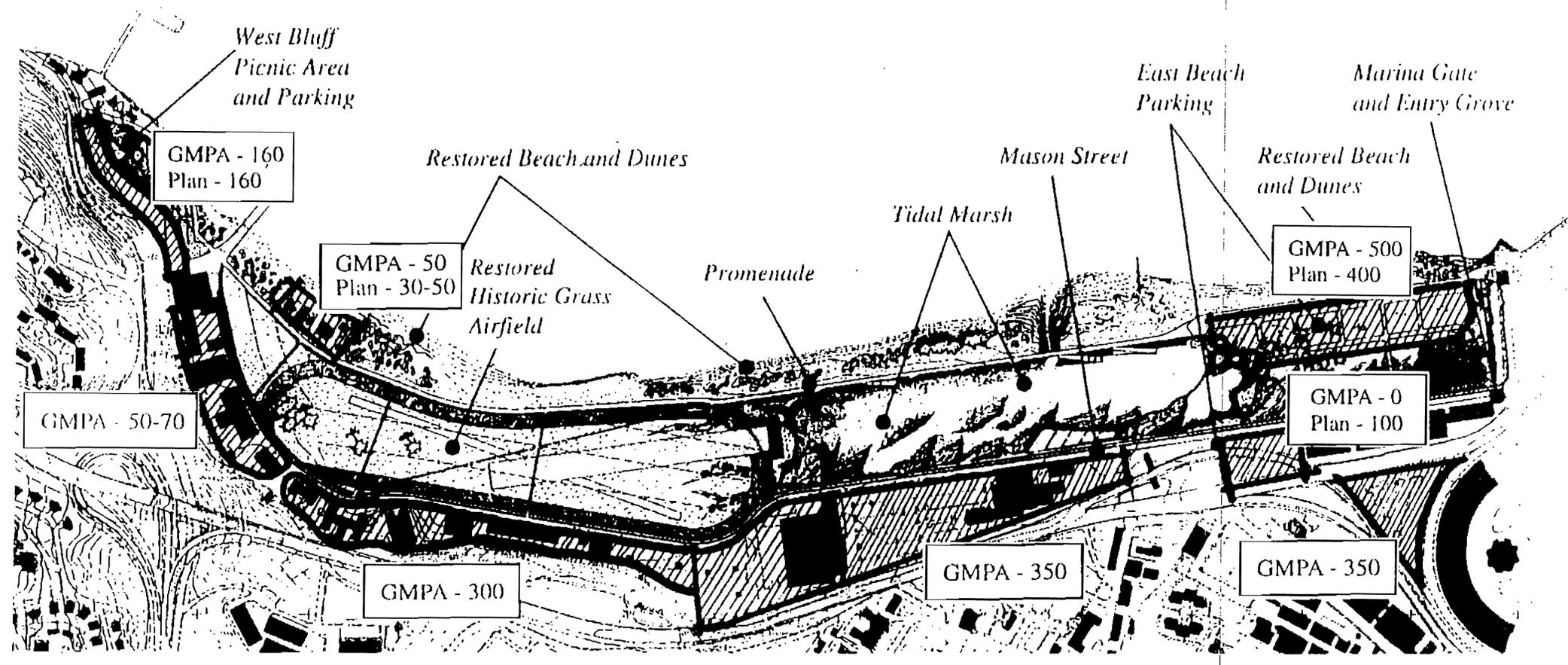
The traffic impacts analysis for the Crissy Field EA specifically compared land use and trip generation potential for the proposed action against that addressed in the Presidio GMPA. The analysis showed that the proposal is generally consistent in these terms, and the traffic which would result from the proposal is consistent with projections in the GMPA. The GMPA addressed cumulative impacts of traffic growth outside the Presidio, and committed to mitigation including ongoing monitoring of traffic and travel modes, development and implementation of a comprehensive Travel Demand Management (TDM) program to reduce traffic growth, a commitment to pursuing improvements to transit service, and development and implementation of a comprehensive parking management program to support TDM and transit objectives while minimizing parking related impacts to the park and its neighbors. All of these mitigation efforts are under way to address Presidio wide traffic growth, projected in the GMPA, with which this plan is consistent.

4. Clarify the parking information in the EA, and how it relates to the GMPA/EIS parking. Discuss location of special event parking and how it will be accommodated. The City of San Francisco Planning Department letter raised these issues. (Figure 1)

Parking provided for in the proposed action is consistent with the parking needs identified in the GMPA. The GMPA calls for 1,760 parking spaces in the entire 150-acre Crissy Field planning area, which includes about 50 acres south of Old Mason Street - outside the scope of the proposed action. The GMPA recommended a distribution of parking spaces throughout Crissy Field in relation to anticipated demand. That allocation called for about 500 spaces at east Crissy Field, about 350 in the vicinity of the Palace of Fine Arts, about 350 spaces near the Commissary south of Mason Street, about 300 spaces south of Old Mason around Stillwell Hall, and about 260 spaces at the west end of the historic airfield extending out to Torpedo Wharf.

The traffic impacts analysis for the Crissy Field EA verified that travel demand, and therefore parking demand for the proposal in the EA was consistent with projections in the GMPA. The Crissy Field plan provides 400 of the 500 recommended east Crissy parking spaces north of Mason Street, and the remaining 100 spaces south

San Francisco Bay



Parking Proposed in Presidio GMPA and Crissy Field Plan

of Mason west of the warehouses. This arrangement will conveniently meet normal demand while minimizing impacts to the area. It will also meet peak demand, with slightly less convenience to the peak-period users, which is consistent with travel demand management strategies that are built into both planning efforts.

The 700 spaces recommended in the GMPA in the vicinity of the Palace of Fine Arts and central Crissy south of Mason Street near the Commissary are outside the EA planning area, and will be addressed in the future in Doyle Drive reconstruction planning efforts. In the meantime, existing parking spaces in these areas will continue to meet projected demand. Similarly, 300 spaces recommended in the GMPA for the area around Stillwell Hall south of Old Mason Street are also outside the EA planning area. Existing parking in this area will also continue to be available throughout Crissy Field development.

Finally, the 260 parking spaces recommended in the GMPA for the area west of the historic airfield to Torpedo Wharf includes some parking to be developed south of Mason among the historic hangars, with the rest to be north of Mason around the Coast Guard Station and farther west at Torpedo Wharf. The Crissy Field EA plan includes continued use of 30 existing parking spaces at the Coast Guard Station, the potential addition of 20 spaces east of the Coast Guard Station in response to public comment (see page 10) and 160 spaces at Torpedo Wharf, which is consistent with parking demand expected at those locations. An additional 50-70 spaces (depending on whether 20 spaces are added adjacent to the Coast Guard Station) will eventually be developed around the hangars outside this planning area. As in the other cases, existing parking in this area will continue to be available throughout Crissy Field development.

The Presidio's GMPA also called for 200 special event overflow parking spaces to be located on the airfield. The Crissy Field EA specifically concludes that use of the restored airfield for overflow parking is not desirable or necessary. This need for event parking can be satisfied through event management and the Presidio's parking management plan, which will require event scheduling and shuttle services sufficient to utilize large parking areas south of Old Mason Street on Crissy Field (350 spaces planned for central Crissy) and those within the main post (1,782 spaces planned) and Letterman (1,554 spaces planned) planning areas, for whatever events generate the need for that overflow parking. Crissy Field parking observations conducted during several special events since the GMPA was completed indicate that the need for spaces beyond the planned 1,760 should be relatively rare, easy to identify in advance, and therefore feasible to address with the parking management plan coordinated through the GGNRA Special Park Uses Group (SPUG) which handles event permitting. Event guidelines regarding size will be determined to assure consistency with the GMPA.

5. A parking management plan is needed to address parking issues including special event parking, accommodating peak recreational demand and managing parking to discourage unnecessary automobile trips and reduce impacts on neighborhoods. This was specifically recommended by the SF Planning Department. The Planning Department, the St. Francis Yacht Club and many individuals also expressed the need to manage the grass parking at the east beach to avoid competition between recreational uses and parking or expressed concerns about whether the design would be able to assure that the unstructured space would accommodate the desired number of vehicles were also expressed.

In the GMPA/EIS, the NPS committed to development and implementation of a parking management program for the Presidio. Implementation of this commitment has already begun, in the form of a study and recommendation report developed for the NPS by a traffic engineering consultant in coordination with park staff and SF Planning Department staff. Continued implementation is under way in the form of incorporation of parking management requirements in Presidio lease agreements, and the development of parking management coordination for permitted events. The NPS will continue to develop and implement a parking management program in accordance with recommendations presented to date and the specific requirements of ongoing planning efforts for Presidio resources.

The generous amount of space allocated for grass parking in the east beach area is more than adequate to accommodate the desired parking as well as associated recreational activities, such as rigging and picnicking.

During the design phase, design details will be developed to provide for appropriate separation of these activities, and provide enough structure to guide parking in a space efficient manner. Staff and the designers will also work with representatives of the San Francisco Boardsailing Association on these and other details of the east beach area. Signage and management will also be important in assuring that this space is used as intended.

6. Have the impacts of not extending Mason Street through traffic through to Fort Point as envisioned in the GMPA been assessed?

Yes, analysis completed for the EA concluded that impacts would not be significant. The transportation analysis for the GMPA/EIS specifically recommends extension of Mason Street through to Marine Drive, directly linking Crissy Field and Fort Point to alleviate traffic pressure on the steep, narrow, and historic Long Avenue. The transportation analysis also includes considerable discussion about the tradeoffs of travel distribution between Long Avenue and the Mason/Marine extension, including the long-term effects of implementing a shuttle system in the Presidio. The discussion indicates that several variations on the recommended access scheme could be implemented, dependent on development of site design details.

The Crissy Field EA includes provisions for a limited-access connection of Mason and Marine Drive through a parking lot near Torpedo Wharf. The access-controlled connection would allow transit, emergency, and some operational travel through the corridor, thereby reducing demand for travel on Long Avenue. The connection also provides direct access to the Torpedo Wharf area, since the parking lots constructed at the end of Mason (east of the access control) are designed to serve both Crissy Field and Torpedo Wharf visitors.

The transportation analysis conducted for the Crissy Field EA also specifically addresses traffic impacts of making or not making the Mason / Marine connection. The analysis concludes that traffic volumes generated by Fort Point and Torpedo Wharf could be accommodated by either route alone, possibly with concentrated impacts at the intersection of Long Avenue and Lincoln Avenue, or at the intersection of Lincoln Avenue and McDowell Avenue. The proposed action distributes traffic among both routes without creating a new route for pass-through traffic of any kind. As a result, concentrated impacts at key intersections will be minimized or eliminated altogether.

7. How to accommodate future parking demand and assure adequate parking during construction.

Currently, Crissy Field, the Letterman complex, and the main post all have excess parking. Construction activities affecting Crissy Field parking areas are expected to be sequenced so that they don't all occur at once. Replacement parking can also be provided in other nearby Presidio lots during construction. In the future, Doyle Drive's reconstruction will need to be achieved in a way that maintains parking supplies and traffic routing throughout construction. This issue is not a function of the actions proposed by NPS here, and will need to be addressed in the Doyle Drive reconstruction project planning.

8. Other comments regarding the amount of parking. Comment on the EA indicated that while there is general agreement about the amount and location of parking, there is still some concern on the part of the public. Comments included St. Francis Yacht Club's concern about adequate parking capacity and possible spillover onto the lot adjacent to the Club, San Francisco Boardsailing Association's request for additional parking east of the Coast Guard Station to accommodate boardsailing launching as well as an individual's request to eliminate the 160 car West Bluff parking lot and the SF Bicycle Coalition preference for fewer parking spaces.

The number of parking spaces included in the GMPA represents a balancing of competing needs of various groups, transit goals, preservation of open space and other considerations. The planned parking supply is designed to match expected demand both now and in the future, transitioning to lower demand rates as transit use and travel demand management programs become increasingly effective, consistent with the GMPA. Demand rates are calculated for planned land uses based on available and planned facilities and observed patterns of usage for non-building-related activities. Presidio parking areas are distributed to provide slight surpluses along boundaries (to minimize impacts to neighbors), and slight shortages in the interior of the park. Locations are selected to accommodate planned activity centers.

All development and activities planned for Crissy Field in the EA are consistent with the GMPA. Because of the timing of the Crissy Field development compared to Doyle Drive, additional parking spaces identified in the Doyle Drive corridor will remain available throughout the first few years of Crissy Field usage, and can be adjusted to provide additional capacity or reduced to provide additional non-auto incentives as justified by performance of the system at that time. Mitigating measures identified in the Presidio's GMPA/EIS specifically call for ongoing monitoring of and adjustments to parking supplies throughout the Presidio. As with parking anywhere in the park, the Crissy Field parking facilities are an integral component of the Presidio's parking system, and will be actively coordinated through a park-wide parking management program in response to current and planned parking demand and supply data. Based on the number of parking spaces provided and additional mitigation identified in the GMPA, NPS doesn't believe that there will be spillover onto the lot near the St. Francis Yacht Club.

In response to the suggestion that approximately 20 spaces be added immediately east of the Coast Guard Station, staff recommends that this small adjustment be made, subject to confirmation that it can be incorporated in a way that minimizes its intrusion on the waterfront, is compatible with the Coast Guard Station site and will not adversely affect views. This additional parking would provide space for disabled access, recreational users, and will serve the Coast Guard Station.

The West Bluff parking lot is necessary to serve the planned uses of the site and should not be eliminated.

MASON STREET BIKE PATH WIDTH

In response to numerous requests to widen the bike path along Mason Street, staff recommends that a minimum of 12 feet be used in the detailed design. Other design suggestions will be considered in the detailed design.

HELIPAD

The San Francisco Planning Department raised several issues related to the helipad facility and its availability for use not related to the operation of the park. The Planning Department expressed concern with the elimination of ongoing emergency medical transport use of the Crissy Field helipad as well as future use for disaster response, and suggested that the heliport be retained until other options are available. Staff has discussed this issue with the City Planning Department, the Emergency Medical Services Administrator, the Port of San Francisco, and emergency medical transport providers.

The EA states that Crissy Field will remain available for helicopter use in the event of a disaster or other emergency but that the permanent features that currently exist there will be eliminated. This is generally consistent with the GMPA which states that the helipad would be retained for limited and specific uses, that the fencing would be removed, that it would be blended into the airfield, and that the location on the airfield could change. The GMPA did not address the level of use. The EA, in Section 4.2.1.3 states that emergency helicopter landing could be accommodated on the restored airfield. In addition, the EA notes that the restored airfield would be available for other disaster relief functions.

Although the concrete pad and lighting are desirable for a permanent heliport as the City Planning Department asserts, restoration of the historic airfield will require demolition of the existing helipad features. Reconstruction of these as permanent features on the restored historic airfield is not compatible with the restoration or future recreational uses, and temporary lighting and fencing can be utilized in a disaster or other emergency situation. NPS has identified several helispots (emergency landing locations) throughout the park which would be used in emergencies.

NPS does not believe that the impact of relocating this use to other facilities is a significant impact. The current medical emergency transport use of the helipad averages only 12 landings a month. Poor weather at Crissy Field

often makes it undesirable for helicopter use. Other facilities currently exist within the City to accommodate this use, and the travel time difference from the other facilities to area hospitals is not significant.

The city has also indicated its desire to improve access to San Francisco hospitals in cases of medical emergency in order to improve the overall functioning of the city's medical transport capability. We will consult and continue to work collaboratively with SF Planning Department, San Francisco EMS Agency, the Office of Emergency Service and other disaster response organizations to assist them in their efforts to effect a smooth transition from use of Crissy Field as a helipad site for emergency medical services.

AIRFIELD RESTORATION

Several comments were received regarding design details related to the restored airfield. These included suggestions to remove trees, and eliminate various features including the pathways, the racetrack delineation, and to extend the length of the airfield restoration. Comments also were received expressing concern over the loss of historic resources from a later period, the treatment of the airfield edges, and the design elevation.

A minimum number of paths has been proposed to cross the airfield for visitor access and to accommodate the disabled. These will be designed in such a way that they have a minimum visual impact on the airfield but provide important accessible routes connecting nearby structures with the beach and promenade. It is important to understand that on a flat field this vast (28 acres) these paths will be imperceptible unless one is standing immediately adjacent to them.

Photographs from the period of greatest significance show a trace of the racetrack still visible on the airfield -- thus it is historically accurate to restore some trace. The proposal calls for a very subtle representation, such as the use of a slightly different grass or mowing height.

The EA states that the interpretation of the airfield's historic patterns of use shown in the proposal are examples, and that the actual restoration details will be developed in the design phase in consultation with park staff specialists, and if necessary, the State Historic Preservation Officer. Pedestrian paths are necessary for disabled access on this large site. The EA states that trees on the airfield which are retained in the plan would not be replaced when they are no longer viable. The EA also states that a programmatic agreement (PA) was developed in 1994 to address the effects of the implementation of the GMPA on historic properties at the Presidio, and that all effects of the proposed action were addressed in the PA, completing compliance with the National Historic Preservation Act.

MARSH

Strong support for marsh restoration was expressed by more than 190 individuals and 46 agencies/organizations commenting specifically in favor of the marsh component of the plan, or in support of the overall proposed action.

Along with the expressions of support were several comments suggesting design modifications and suggestions to reconsider technical assumptions and criteria to improve the functioning of the marsh.

1. Suggested Design Modifications

Marin Audubon Society, Environmental Forum of Marin and several letters from individuals suggested modifications to improve the ecological functioning of the marsh, primarily encouraging reduction in overlooks and relocation of paths or the boardwalk. Other suggestions included relocating the marsh channel to avoid impacts to the existing dunes or expressing concern over the interruption of pedestrian access along the beach by the marsh channel.

The location of the marsh channel as well as the extent and location of access represents a careful balancing of other resource and recreation values, including avoiding a known archeological site. The EA evaluates the impact

of constructing the marsh channel through existing dunes, concluding that it is not a significant impact and will be offset by other dune restoration.

The proposed design incorporates many features to reduce the impact of access on future ecological values such as designing overlooks as blinds, incorporating barrier fencing, self closing gates and a vegetative buffer. It has also eliminated a second boardwalk which was included in an earlier design and relocated the existing boardwalk in response to these concerns. Although staff acknowledges that further reductions in access would improve wildlife habitat values, we do not recommend further changes in the location or extent of access/overlooks at the marsh with the following exceptions. During the detailed design, the location of the overlook adjacent to the south end of the boardwalk will be reconsidered to reduce impacts of visitors, while retaining the intended overlook function and design integrity. Detailed design will also consider the addition of a pedestrian crossing closer to the beach

In response to comments, staff also recommends consideration of moving the western access road to the east beach parking lot as far eastward as is practical and safe to consolidate uninterrupted dune scrub.

Additional changes are not recommended because of the need to balance other requirements. NPS believes that these are design details that do not alter the impact of the proposed action.

2. Size of marsh, future construction of culvert.

Several commenters expressed the opinion that the marsh should be larger for better ecological value or hydrologic functioning, or that the provisions for and commitment to expand the marsh in the future should be strengthened. Comments suggesting that the impacts of a culverted inlet on views and recreational activities would be significant were expressed. Future construction of a culvert is identified as mitigation to improve tidal functioning in the event that frequency of future maintenance becomes problematic. Marin Audubon Society and one individual suggested greater flexibility in response to future evolution of the marsh, allowing it to become intermittently tidal in the event of frequent closures.

The GMPA clearly states that a larger marsh should be restored if feasible. As noted in the EA, design of the marsh in this phase of implementation includes features which would facilitate its future expansion to the area south of Mason Street.

The culvert is recommended as a mitigation feature if needed. Based on analysis in the marsh design, as noted in the EA, maintenance frequency to maintain an open channel is not likely to become an issue in the next 30-50 years. If the marsh is expanded to 30 acres within this timeframe, a culvert would not be necessary. NPS acknowledges that in the future, if it would become necessary, a separate environmental document would be prepared to address visual impacts and alternatives including expansion of the marsh (retaining a natural inlet), and allowing the marsh to become intermittently tidal. Consideration of a culvert does not preclude other future options.

3. Technical Comments:

One individual expressed strong support for marsh restoration and offered detailed technical comments regarding selection of a broader range of reference systems to guide the detailed design; recommending reconsideration of information regarding tidal sedimentation patterns and rates and modification of the design and evaluation criteria to reflect a different assumption regarding the relative influence of sand and mud in the evolution of the marsh; suggested modification in location of the tidal channel for greater stability and to reduce the impact of the channel on shoreline configuration; and reduction of the upland buffer and island components of the marsh in favor of greater intertidal habitats.

These technical comments have been carefully reviewed with the commenter and Philip Williams, the design consultant for the marsh, and several of these comments will be further considered in the more detailed design of the marsh. During the design phase of the project, continued refinement of the information regarding sediment input will be used to identify any adjustments in the design needed to reflect new information. Design

modifications which could be made in response to these comments, such as changes in the initial grading of the marsh plain terraces, or reduction in island and buffer habitats, would not have environmental effects in addition to those already disclosed in the environmental assessment, and would not change the basic nature of the marsh as described in that document.

A broad range of reference systems was used in the design of the marsh, including references such as those suggested by the commenter. The predictions of expected tidal sedimentation patterns and rates used in the marsh design was based on several sources including soil corings, dredging records, and direct measurements of sedimentation made at the St. Francis Yacht Harbor. We feel that this is adequate information upon which to base the design. ~~Since the assumptions regarding sediment rates were very conservative, the question of the relative dominance of littoral sand versus mud in the evolution of the marsh would not change the environmental effects of the proposed action as described in the EA.~~

Rubble which would remain in the beach and dunes would stabilize the location of the entrance channel. Any adjustments of the shoreline configuration in response to the marsh channel would be small in scale and would not affect archeological resources or net littoral transport. In addition, the potential area of impact is limited primarily to between the proposed marsh entrance channel and the stormwater culvert approximately 500 feet to the east and this impact would not be significant. We do not feel that the proposed changes in the location of the marsh channel location are feasible or would result in fewer environmental impacts and do not recommend these changes.

Additional technical review of the more detailed design will be obtained by the NPS in the design phase through assistance from other NPS professional staff, other agency technical staff, peer review or other technical consultants as needed.

4. Opposition to marsh

Although the tidal marsh was strongly supported by the majority of those commenting on the plan, several individuals as well as the Council on America's Military Past continue to express opposition to the tidal marsh. Other commenters, including Cow Hollow Association, Inc. and one individual stated a preference for the dune alternative. Five individuals preferred the no action alternative. Reasons cited included concerns regarding viability, cost, maintenance, compatibility with other recreational uses, and preference for either the existing condition or other values. One commenter stated that a feasibility study, as called for in the GMPA was required.

One letter from an individual enclosed petitions circulated prior to release of the EA. Although there were 3 separate petition texts, over 2700 stated that: "We, the undersigned, oppose the creation of an artificial Crissy Field wetland that would cause conflicts with traditional recreational uses, including off-leash dog walking. We strongly support expanded opportunities for off-leash dog walking at Crissy Field, and consider it essential that this activity be officially preserved, and protected in the design plans for Crissy Field." Over 800 additional signatures were collected on petitions which were silent on the issue of a wetland, addressing only the support of continued opportunities for off leash dog walking at Crissy Field and other sites.

The Crissy Field Plan addresses the concerns raised in these letters. The plan also addresses the concerns raised by the petition. It includes expanded opportunities for off leash dog walking, and the marsh design, as noted in the EA, incorporates features to avoid conflict between other recreational activities, such as off leash dog walking, and wildlife. These comments do not raise issues beyond those already addressed in the EA.

As noted in the EA, a feasibility study and a preliminary design have been completed.

VEGETATION

Several comments were received suggesting correction of species lists, and for use of species to enhance wildlife habitat. Comments from U.S. Fish and Wildlife Service and one individual suggested reconsideration of the

opportunities to restore special status plant species in the project area. California Native Plant Society (CNPS) notes some errors in the list of species which would be used in revegetation, and made recommendations for using commercially available (rather than locally collected) native seed. Other comments suggested changes in the plant species list to either correct errors, or eliminate plants such as poison oak and blackberries, which some reviewers perceived as undesirable.

CNPS recommended removal of the small cypress grove within the dunes.

1. Suggested changes to plant species:

The decision to avoid the introduction of special status species in the restoration was made recognizing the high level of recreational use at Crissy Field anticipated to continue in the future and the concern expressed by many individuals that special status species could cause a change in management of the site that would restrict recreational uses. Although it is still our intention to avoid introductions of special status species that could create future conflicts, or adversely affect these species, there may be opportunities to consider certain plant species in the marsh where protective fencing and barrier vegetation would preclude public access and prevent conflicts. Staff recommends that careful consideration be given to introduction of special status plant species in the marsh, and that this action only be undertaken with the confirmation that future conflicts would not occur.

2. Other vegetation comments: These comments do not suggest changes which would affect the environmental impacts as discussed in the EA. Poison oak will not be used in revegetation. Suggestions to correct the list of species to be used in restoration will be reviewed by staff specialists, and modifications made to the detailed design as necessary. The cypress grove in the dunes will be retained for its recreational and aesthetic value, however these trees will not be replaced when they are no longer viable.

COASTAL PROCESSES/IMPACTS TO ST. FRANCIS YACHT CLUB/ HARBOR AND NEIGHBORHOOD

Both the City Planning Department and St. Francis Yacht Club expressed concern about potential sedimentation of the harbor and St. Francis Yacht Club expressed concern about impacts to the club's breakwater and foundation as a result of rubble removal. The City Planning Department also expressed the concern that windblown sand would impact adjacent neighborhoods.

The EA in 4.2.4.1 addresses the concerns regarding littoral transport of sand, concluding that the removal of rubble would not affect siltation of the yacht harbor because rubble does not currently impede the littoral transport of sand. Removal of rubble and reconfiguring the beach would also not affect the St. Francis Yacht Club breakwater/foundation. As noted in the EA, rubble will be retained or replaced with engineered shore protection where needed for this purpose, including in the area adjacent to the Marina Green seawall.

Wave energy from the northwest is the primary cause of impacts to the seawall which cause deterioration requiring periodic maintenance and repair. Wave energy from the northwest would not be affected by the proposed reconfiguring of the beach.

Windblown sand will be limited primarily to the area of active foredunes, north of the promenade. Because of the distance between the nearest adjacent residences and this area and the large area of stabilized dunes and other landscape treatments which would be used at the east end of the site, windblown sand from Crissy Field after project implementation will not affect adjacent neighbors. Windblown sand will better captured on site by the proposed vegetation.

DOGS

Several commenters including Marina Neighborhood Association, National Parks and Conservation Association, Environmental Forum of Marin, Sierra Club Presidio Task Force and Marin Audubon Society stated one or more

of the following: concern about the impacts of off-leash dogs, enforcement of voice control and dog restrictions, preference for no off-leash dog walking, need for monitoring of impacts of off-leash dog use and a procedure for adjusting areas available for off leash dog use. Fifteen individuals expressed concerns that dog walkers do not clean up after dogs, or that owners do not adequately control their dogs.

The plan provides access to areas where staff felt conflicts would be minimized. Prohibiting dogs in the marsh and the waterbird protection area, and requiring them to be leashed on the Promenade west of the Coast Guard Station and in the West Bluff area provides opportunities for other visitors and protects sensitive resources.

~~To address problems of cleaning up after dogs and appropriate dog behavior in voice control areas, NPS will work with the SPCA and dog walker representatives to begin an active education program as soon as possible. NPS will enforce voice control and clean up requirements, and monitor the results of these efforts. Areas available for off leash dog use will be periodically reevaluated and adjustments made in management if necessary. Proposed changes in off leash dog access will be brought to the attention of the Advisory Commission prior to taking action.~~

ENVIRONMENTAL CLEAN UP

Comments were received from Arc Ecology, Sierra Club Presidio Task Force, and an individual member of the Presidio Restoration Advisory Board (RAB) questioning the adequacy of the ecological risk assessment and existing hazard analysis in the EA and requesting responses to specific questions regarding existing contamination, completion of the Army's Remedial Investigation and Feasibility Study (RI/FS), the Army's cleanup schedule and contingencies for addressing previously unknown contamination which may be discovered during or after remediation. Comments were also received from the U.S. Army identifying recent developments in the restoration program which could affect the proposal and scheduling and funding concerns. The State Department of Toxic Substances Control (DTSC) commented, suggesting minor changes in the EA, and recommending a Health and Safety Plan and a Contingency Plan be prepared. These comments are addressed in detail below.

The Army's cleanup of contaminated sites is a separate project, addressed in separate environmental data collection, analyses and documentation. This cleanup is ongoing and is regulated by DTSC and RWQCB. NPS acknowledges that this process has not concluded, and that cleanup levels and strategies have not been finally approved. The EA relied primarily on information for which analysis had been performed in the Army's studies. With regard to issues involving contamination and remediation, the EA concluded that the project would not significantly impact the environment for the following reasons:

1. An interagency agreement between the Army and the Department of the Interior, known as Subagreement 7 commits the Army to fulfilling its environmental restoration obligations at the Presidio in a manner that is protective of human health and the environment and which meets all applicable legal requirements. Subagreement 7 cites the GMPA as the indicator of future land use in the remedial decision-making process.
2. CERCLA, the National Contingency Plan, and the State Health and Safety Code all require cleanup to levels protective of human health and the environment.
3. As noted in the EA, where necessary, the NPS will not implement elements of this project in areas affected by contamination until the Army has completed its remediation in accordance with Subagreement 7 and applicable laws regarding health, safety and the environment.
4. New information regarding the Army's cleanup program will be evaluated as it becomes available to determine if significant new impacts would result from the proposed action (Crissy Field Plan). Additional environmental analysis and public review would be performed, if necessary.

5. To coordinate plan implementation with clean up, and to identify any additional modifications/mitigations, NPS will continue to work with state and federal regulators and the Army in the detailed design phase of the plan.

Following is a response to the comments received organized by common topics:

Comment: The Army's cleanup at Building 207 (former gas station at Halleck and Mason) may not be in place or completed in time for the plan implementation; other new contamination problems could be encountered during excavation of the wetland site or in other areas such as at the Commissary (old fuel lines), or new underground storage tanks could be discovered.

Response: The recent finding of contamination at 207 will require the Army to investigate and abate contamination at that location in an expeditious manner, working closely with NPS. We believe that the contamination can be quickly remediated if the appropriate methods are used and the needed funding is secured. We also have requested the Army to fast track the investigation, and, if needed, remediation of the possible fuel lines in the Commissary area. No excavation will occur in that area prior to cleanup activities.

We are exploring ways to address the possible discovery of additional tanks or contamination in the course of plan implementation. We will develop a contingency plan to address how any currently unknown hazardous substances that may be encountered during the construction phase will be handled. We will request that the Army maintain emergency funds and capability to respond to such discoveries. If necessary, we will also require the contractor who performs the plan implementation to have hazardous waste handling capability, so NPS can exercise maximum efficiency in developing the site in a timely and cost effective manner.

Comment: Limited funding is available in the Army's overall restoration program; funding shortfalls for sites within or adjacent to Crissy Field may be identified once the cleanup work begins in these areas.

Response: The Army has been in discussions with NPS regarding its funding status. We understand that the Army is in the process of developing a comprehensive budget request for FY-97 through FY-2003 to fully address Crissy Field and other cleanup needs at the Presidio. We have requested that the Army, as part of a strategic plan for cleanup of Crissy Field, identify the needed funding for this work, at the soonest possible opportunity. NPS is working with the Army to prioritize where available monies are best spent consistent with its reuse objectives; however, NPS expects the Army to seek and obtain funding to fulfill its obligations under Subagreement 7.

Comment: Why is there no discussion about the Building 231 contamination area and possible impacts to the wetlands?

Response: Building 231 is mentioned on page 3-39 of the EA. While the Army must address and remediate contamination in this area; we do not expect that it adversely impacts this phase of the Crissy Field reuse plan because contamination from this site has not migrated into the wetland area. Currently, drainage through storm drains is routed to the east of the Building 231 area and does not directly pass through it. However, cleanup of this area needs to be completed prior to restoration of the riparian corridor, a separate project identified in the GMPA.

Comment: Why does the EA reference the Army's draft Remedial Investigation (RI) report, which has not been accepted by the regulators, the RAB or the NPS?

Response: NPS used the Army RI report because it is the most comprehensive available source of information on this topic. When the Final RI is available, we will review it in consultation with the regulatory agencies to ensure that there are no new impacts that have not been addressed in the EA. Any new impacts will be addressed and mitigated where possible. During the plan design phase, NPS will perform additional independent analyses, as needed. In addition to the RI, the EA draws on other available sources of information regarding water quality, such as the Dames and Moore Storm Water Management Plan.

Comment: The EA needs to present more current information regarding the Building 937 site groundwater data and the effectiveness of the UVB treatment system.

Response: We do not expect the presence of groundwater contamination at the 937 site to adversely impact this phase of the Crissy Field plan, except from a design standpoint. This is because the plan does not call for subsurface activities that would encounter groundwater in this area. However, NPS will need to incorporate treatment plant design and location of facilities into its design for this area of Crissy Field. Also, any source removal of contaminated soils required at this site must be performed prior to plan implementation. We refer you to the Army for additional information regarding data for this site and the effectiveness of the treatment system.

Comment: Why is lead contamination from the Golden Gate Bridge not addressed in the EA?

Response: Lead contamination from the Bridge District is not expected to reach this area of Crissy Field. Based on topography and distance, it is unlikely that lead contamination from sandblasting operations traveled east of Torpedo Wharf. The Army has conducted extensive investigations in the area of former Buildings 949, 950, 973, 974, 975, 976, and 979 and is addressing contamination found in these areas, including lead. NPS also conducted tests in 1992 which found low lead levels and no evidence of sandblast paint chips in Crissy Field beach sand.

Comment: The EA only cites one sample taken from El Polin Spring; is this information enough to base the analysis on? Why did the EA not take into account more recent data?

Response: This one sample is not intended to provide an entire analysis; but is rather used to provide historical information. More pertinent are the Dames and Moore 1994 storm drain analyses, which looked at flows of surface water quality from the watershed at various points. The Draft RI report and Marine Ecological Sampling and Analysis Plan have shown concentrations generally consistent with the conclusions in the EA with the exception of new data for copper, which exceeds Aquatic Water Quality Criteria. As with the other metals, it is expected that dilution from tidal exchange will mitigate this contaminant.

Comment: Did members of the NPS environmental team review the EA before it was released for public comment?

Response: Yes.

Comment: The Affected Environment Section 3.5.3.2-3.5.3.3 only addressed drinking water criteria.

Response: See Section 4.2.5.3 where surface water was evaluated against Aquatic Water Quality Criteria.

Comment: Section 3.5.2.2-3.5.3.3 focuses on heavy metal contamination; was a full suite of analyses performed for groundwater contaminants?

Response: Yes, a full suite of analyses was included for groundwater in the Army's sampling program.

Comment: The most recent data sets used are from 1994; the lack of current data compromises the analysis.

Response: For the most part, the data collected in 1994 are from the most recent sampling that was performed for the 2nd Revised Draft RI. Limited additional data has subsequently been collected and will be reported in the Final RI; NPS will review the Final RI against conclusions reached in the EA. The design phase of the plan implementation will use the most recent data and data interpretation, as presented in the final RI report - in particular regarding the ecological risk assessment - to factor in any needed mitigation or design features to address specific contaminants.

Comment: The EA should contain a chart of the contaminated areas showing their significance, cleanup status, cleanup schedule, cost, funding and an estimate of impact to the Plan implementation schedule.

Response: NPS is working closely with the Army, the regulators and the RAB to address the issues of coordination between the cleanup and Plan implementation. We have requested that the Army work closely with NPS and the RAB to develop a strategic cleanup plan for Crissy Field that should result in the kind of analysis suggested in your comment. We acknowledge that the Army's cleanup schedule will affect Plan implementation.

Comment: Have all cleanup levels been set and if not why? Will the Army be responsible for further cleanup once cleanup levels are set?

Response: All cleanup levels have not been set since a RAP/ROD has not been signed for this site. The NPS is working aggressively with the Army and RAB to ensure that cleanup levels are determined. The goal for sites on Crissy Field is to complete cleanup at each site to the appropriate cleanup level, consistent with the reuse plan so that further cleanup is not needed. If needed, the Army (under Subagreement 7 and applicable environmental laws) would be responsible for any additional cleanup where interim actions do not set the final cleanup level.

Comment: What is the timing for the completion of the Remedial Action Plan/Record of Decision?

Response: According to the Army's current schedule, the RAP/ROD is scheduled for the Summer of 1997. We are working with the Army and the RAB to develop alternative, expedited means of reporting and decision making for Crissy Field sites.

Comment: How long is long term for operation and maintenance of cleanup actions, and could cleanup activities delay implementation of the Plan or portions of it?

Response: Long-term refers to operation and maintenance of groundwater treatment plants, which can be 5-30 years. Long-term operation and maintenance of groundwater treatment units should not interfere with NPS' reuse plans, because NPS will work with the Army to incorporate the plant and facility locations into the plan design.

Cleanup activities could delay implementation of the Plan. This could occur if the Army is unable to either fund or perform the cleanup work in the needed timeframe or because the parties do not agree on cleanup methods or cleanup levels. While this delay might have cost impacts for Crissy Field, it is not expected to result in additional or different environmental impacts related to actions proposed by NPS in the Crissy Field Plan.

Comment: Has the Army met all of the deadlines on task orders outlined in the Regional Board's May 1996 Cleanup Order?

Response: Yes.

Comment: When will the proposed individual CAPs be developed to address site-specific cleanups where groundwater contamination occurs?

Response: Development of site specific CAPs for petroleum contaminated sites impacting the Plan area will have to be determined as part of the Army's Crissy Field strategic plan mentioned above.

Comment: What are the sources of contaminants in the Tennessee Hollow watershed and what other watersheds drain into Crissy Field?

Response: Sources of contaminants in the Tennessee Hollow watershed include nonpoint source urban runoff, materials in the storm drain system, several landfills (1, 2 and E), and at the lower end, Buildings on Halleck street where underground tanks and piping or other releases to the environment occurred, such as Building 231,

228 and 207. The only other major watershed that drains into Crissy Field is from the area to the west that drains through the Cavalry Stables area.

Comment: What types of measures are proposed to divert surface and groundwater flows to the Bay once construction begins and would the tidal marsh inlet channel act as a conduit for contamination?

Response: Water generated by dewatering to construct the marsh would be tested to determine whether it would be discharged to the bay or to the sanitary sewer system. As noted in the EA, plan implementation would follow the Army's cleanup of the site. Any remaining contaminants would be sufficiently diluted through tidal exchange to negligible concentrations. A recognized value of wetlands is their ability to trap, break down, or sequester pollutants generated from upstream runoff prior to discharge into receiving waters. As noted above, during the design phase of the project stormwater management practices needed to improve the quality of freshwater and stormwater flow to the marsh will be incorporated as appropriate. EPA standards will be met.

Comment: How effective are the Interim Groundwater activities for Building 637 and when will long-term remediation plans be implemented?

Response: We do not expect the Building 637 site to pose a significant impact on implementation of this phase of the Crissy Field Plan because of its location relative to the proposal. Modeling conducted to date shows that groundwater from this site is not reaching the proposed wetland footprint, nor is it moving in that direction. However, some additional monitoring of the plume needs to be conducted by the Army to confirm this. The Interim Groundwater Remediation activities for this site were simply to skim floating product off of the groundwater table; however, this did not accomplish the goal of long-term remediation. Soil removal actions also occurred which served to remove a significant portion of the source of contaminants from the site. The final implementation schedule for this site has not yet been determined.

Comment: The EA concludes that the risks to aquatic organisms would be low because of substantial seawater exchange; yet the Army's analysis indicates some interaction between groundwater and tides that affects the spread of contaminants.

Response: Substantial exchange of seawater is expected due to the open tidal inlet, as stated in the EA. This comment appears to refer to Army discussions regarding other areas of Crissy Field, such as the 937 site. Tidal mechanisms occurring in wetlands enable the flushing of surface waters; whereas tidal influences on groundwater can, due to changing groundwater levels, create a smear zone of contaminants near the groundwater surface.

Comment: California EPA, Department of Toxic Substances Control (DTSC) commented that the EA should be amended to include lead and TCE in groundwater at the DEH yard, indicate that groundwater monitoring for lead is being conducted at the Fort Point Coast Guard Station and that the terminology in the EA of "ROD" be changed to "RAP."

Response: We appreciate and have noted these corrections. In the planning efforts with the Army to address contamination at the DEH yard, lead and TCE in groundwater will need to be addressed to the satisfaction of the State. These corrections do not affect conclusions of the EA regarding impact significance because implementation of the plan will follow the Army's cleanup for soil and should not impact the ability to conduct long-term groundwater monitoring or remediation.

Comment: DTSC commented that a Health and Safety Plan needs to be developed to ensure worker safety during the construction period; also, a contingency plan needs to be developed to address any hazardous substances encountered during the construction phase.

Response: A Health and Safety Plan as well as a Contingency Plan will be developed for the project.

Comment: DTSC requested deletion of the statement in the EA that the risk of human exposure following remediation is low, since the level of cleanup has not yet been agreed upon.

Response: We acknowledge that a cleanup level has not yet been agreed upon. The premise of this statement was that a cleanup level would be agreed upon that would be protective of human health and the environment, consistent with NPS' reuse plans. Under the terms of Subagreement 7, all cleanups performed by the Army must comply with the California Health and Safety Code, CERCLA and the National Contingency Plan and therefore, must be protective of human health and the environment unless there is a Presidential waiver.

~~Comment: DTSC requested amendment of Section 5.2 to include consultation with the California Department of Toxic Substances Control, the California Department of Transportation, the Golden Gate Bridge District and the California Department of Fish and Game.~~

Response: This section of the EA referred to agencies which had been consulted during preparation of the EA. This section should have included DTSC, California Department of Fish and Game and the Department of Transportation. The Golden Gate Bridge District was not specifically consulted, but did attend the public meeting where the plan was presented and received copies of the environmental assessment.

OTHER COMMENTS

Several commenters suggested changes in the text of the EA including those of an editorial nature, to correct inaccuracies in the document, or to clarify information, with the misunderstanding that the EA was a draft document which would be republished as a final EA. The EA is a final document, which in combination with the Staff Report and FONSI or NOI will complete this phase of the NEPA process. It will not be revised and republished. However, staff have reviewed all of the requested changes. Based on this review, we conclude that the EA as clarified by this report reflects all of the relevant factors to be considered by the decision maker and is adequate to support informed decisions regarding significance of impacts and whether or not an EIS is required.

Comments which address the scope or adequacy of the document or the decision regarding whether to conclude with a FONSI or NOI have been addressed in the Issues discussion above. Other questions and comments request clarification, relate to policy choices among the range of alternatives, preferences of the commenter, or design decisions that do not affect conclusions in the EA regarding environmental impact. Responses to these questions and comments are included in the following section. Editorial suggestions are not responded to in the Staff Report.

DESIGN ISSUES

During public comment a number of design issues were brought up. Some of these issues are already addressed in the plan. Others raise issues to be addressed during the design development phase -- careful consideration will be given to comments made at that time. These issues are organized by area.

East Beach

Comment: Add indoor showers, snack bar, equipment rentals, concession, storage lockers, etc..

Response: The east beach parking area design will include restrooms, outdoor showers, sailboard washing and drying racks, hose bibs, a safety tower, and picnic tables. Amenities such as equipment rentals and a snack bar would have to be provided by a concession or other outside vendor, and as such are beyond the scope of this proposal.

Comment: Provide drop-off area for boardsailors at east beach.

Response: A drop-off area has not been included at the east beach parking area because it was deemed unnecessary in conversations with boardsailors. This issue will be revisited with them during design development.

Comment: Add plexiglas windbreaks at east beach.

Response: The proposal includes a number of vegetated berms or landforms along the west and south edges of the parking area to provide wind protection. No artificial windbreaks will be employed beyond these landforms because of aesthetic or practical considerations.

Comment: Use live oaks rather than cypress in entry grove.

~~**Response:** Monterey cypresses are to be planted in the entry grove as an historical reference to other Presidio gates.~~

Comment: Include a "wave runner" (rescue craft) for boardsailor safety

Response: Special equipment for boardsailor safety is beyond the scope of the proposed action.

Comment: Include rubble removal below the high tide line to improve safety for boardsailors.

Response: Rubble will be removed as much as possible to improve safety of boardsailors.

Marsh

Comment: Provide an overlook of the marsh accessible by automobiles.

Response: Overlooks on the marsh have been designed to minimize their impact on wildlife and maximize their interpretive value. The design carefully minimizes intrusion of automobiles into recreational and natural spaces.

Comment: Soften the edges of marsh.

Response: The ultimate form of the marsh will result from design development. However, it is important to bear in mind that this is a reconstructed tidal marsh in an urban setting, and that other criteria (such as maximizing tidal prism) require some constructed forms.

Comment: Alter location of barrier fencing near the marsh to maximize buffer.

Response: Fencing will be set only a minimum distance into the dune scrub vegetation to mask it from view.

Mason Street

Comment: Use different materials to distinguish between pedestrian and bicycle paths.

Response: The pedestrian and bicycle paths along the south side of the site are being created as a result of restriping and narrowing Mason Street, and thus will be asphalt. Use will be differentiated using signage and other visual cues.

Comment: Make bike path intersection improvements to ensure safety.

Response: During design development, intersection designs will be developed to reduce potential safety conflicts between users and cars at intersections with entrance roadways to East Beach Parking, at Crissy Field Avenue, and at West Bluff parking area.

Promenade

Comment: Make promenade more curving or wider.

Response: The promenade has been designed to follow the route it currently does, which seems to work efficiently. Given the great volume of users, only the most modest curves would be practical. The final configuration and location of the promenade will be established during the design development phase. The 20 foot proposed width of the promenade is expected to be adequate to comfortably accommodate the intended uses.

Comment: Provide night lighting along the promenade.

Response: During scoping we heard from the public that the present character of the site, including natural light conditions, should remain as it is today. The promenade would be illuminated where it comes near parking areas and roadways. Lighting details will be developed during design development.

Comment: Move the promenade south of marsh to reduce impacts on habitat.

Response: The promenade is located where that activity is located today -- to relocate south of marsh would severely impact recreational use and access. A number of features have been incorporated to minimize the impact of the promenade on the marsh including buffer fencing and barrier plantings.

Other

Comment: Provide night lighting along bike path.

Response: As bike path is parallel to Mason Street it will continue to be illuminated as it is today.

Comment: Include telephones on site.

Response: These will be sited during design development.

Comment: Control rollerblading.

Response: Conflicts between recreational users will be minimized by zoning different users and through signage. Details of this will be worked out during design development.

Comment: Signs should be included for education, enforcement and safety purposes.

Response: A detailed approach to signage will be developed as part of the design development process.

Comment: The 100 car parking lot south of Mason Street should be informal.

Response: This parking area will be developed in an area that is currently paved. Irregular parking in this area will be formalized with striping, curbing or other details to maximize efficiency of use.

Comment: Provide a visitor center at Crissy.

Response: In a separate action, a proposal to rehabilitate an education and stewardship center is proposed for Building 603, south of the planning area, to serve community stewardship activities at Crissy. The Presidio Visitor Center will remain where it is currently located, at the Main Post.

Comment: Include pedestrian links to the Exploratorium.

Response: Detailed design will consider how the paths in the planning area link to pedestrian connections serving the Palace of Fine Arts.

Comment: Restore "Column of Progress" (an automobile roundabout) from PPIE at intersection of Gorgas and Halleck.

Response: This historic feature, although interesting, does not date from the period of greatest significance nor have any remaining historic context. It also involves design outside of the current planning area.

Comment: Provide small boat mast up yard and launch ramp near Coast Guard Station.

Response: The offshore areas between the Coast Guard Pier and Torpedo Wharf will be off-limits to boats and other craft as a waterbird protection area, making this an unsuitable location for a launch ramp. Safety and noise concerns are also considerations.

Comment: Provide dog water fountains.

Response: This will be considered in design development where appropriate.

Comment: Ensure that beach is wheelchair accessible.

Response: As noted in the EA, making the promenade and dunes accessible through trail improvements will dramatically improve the accessibility of the beach. Additionally, beach wheelchairs will be made available for public use to make the sandy beach at Crissy more accessible.

Comment: Allow for future light aircraft landing at the airfield.

Response: Because of safety considerations, compatibility with other values, and FAA restrictions, this capability is not included in the proposed plan.

QUESTIONS AND ANSWERS

Q: How will additional maintenance needs be met?

A: Maintenance requirements of the site were analyzed as part of the overall design process. Several design elements were included to reduce the need for maintenance at the site including: the use of native plants with low water requirements, the use of plant with low pruning or trimming requirements, the use of durable, non-corrosive materials, the use of self-propagating and self-sustaining native plant species, and the development of community-based site restoration and stewardship programs. Implementation of marsh greatly reduces the cost of replacing stormwater outfalls, providing a large cost savings, estimated at several million dollars.

Traditional grounds maintenance activities will focus on about 45 acres of the site concentrating on those areas which are irrigated or are used for recreational activities including the East Beach parking area, the promenade, the airfield and the West Bluff picnic area. National Park Service maintenance personnel will be supplemented with an additional 2-3 full-time workers. Project funding will include funds to supplement initial maintenance activities and longer term funding strategies are under examination as part of the planning process.

The community stewardship program, a key component of the plan, will significantly reduce maintenance costs at the site. This program, which is estimated to cost \$50,000 annually, will involve community volunteers in ongoing planting activities, removal of invasive plants and debris as well as monitoring. An endowment will be established through the Golden Gate National Parks Association to provide ongoing funding for this program.

Implementation of the marsh will eliminate the need for costly replacement of several stormwater outfalls. This cost saving will offset the estimated \$3-5 million cost of stormwater outfall replacement.

Q: When will the stormwater management plan be implemented to improve the quality of stormwater discharged to the Bay?

A: Implementation of the SWMP is ongoing. A key element of the Stormwater Management Plan (SWMP) to improve the quality of stormwater discharged to the bay is the implementation of the Crissy Field wetland. Best Management Practices (BMPs) identified in the SWMP to remove suspended sediment before reaching the marsh, such as biofilters and pretreatment basins, will be considered in the more detailed design phase as appropriate. Individual Presidio projects involving new construction have incorporated BMPs and NPS has implemented a street sweeping program. A spill contingency/response plan for the Presidio has been completed.

Q: Does the Presidio have a general stormwater permit; if so is it in compliance? Repairs to stormwater and sanitary sewers have been implemented on specific sites related to rehabilitation.

A: The State Water Board has implemented the USEPA storm water regulations by requiring industries and construction activities to apply for a statewide general permit, and municipalities with populations greater than 100,000 to apply for individual National Pollution Discharge Elimination System (NPDES) permits. Based upon communications with the State Water Resources Control Board, the Presidio does not require an NPDES permit as a municipality or urbanized area. The preparation of the Storm Water Management Plan complies with the

Regional Water Quality Control Board's request for north bay counties. A stormwater permit would be required for implementation of the Crissy Field Plan since more than 5 acres would be disturbed.

Q: Will high fecal coliform collect in the wetlands? What are the impacts to the wetlands?

A: Fecal coliform is addressed in the EA in section 3.5.3.2 which notes that improvements were made to eliminate cross connections between stormwater and sewer systems, that fecal coliform counts during 1994 stormwater sampling were within the range expected for typical urban storm event runoff, and that recent monitoring has confirmed that the recreational contact standard was not exceeded at the Crissy Field Stations. As noted in the EA in section 4.2.5.3, risk to aquatic organisms from contamination would be low because of the dilution occurring as a result of tidal exchange. In addition, corrective measures and monitoring identified in the Stormwater Management Plan (SWMP), cited in the EA, will further improve the quality of stormwater collected and discharged to the marsh. The SWMP includes wetlands restoration as a recommendation to improve the quality of stormwater discharged to the bay and reduce costs associated with replacement of under capacity and poor condition piping and outfall systems.

Q: Why is a portion of the beach to be made part of the waterbird protection area?
Clarify the extent of the waterbird protection area.

A: The GMPA, which is referenced in the EA, states that "waterbird habitat will be protected in a designated portion of the waters between the Fort Point and Coast Guard Piers and in any restored wetland areas." This area was intended to protect waterbirds, such as grebes, diving ducks, cormorants) as well as shorebirds which utilize the beach and water's edge. The EA notes that watercraft would be restricted from the water between the Fort Point and Coast Guard Piers, and that dogs would be prohibited from the adjacent beach, as well as the beach extending for 500 feet to the east. This section of beach is presently the best shorebird habitat at Crissy Field, and the restriction of dogs from this portion of beach will protect this habitat value.

Q: How will the design and management of the marsh avoid creating habitat for mosquitoes and rodents?

A: During and subsequent to preparation of the plan and EA, NPS has consulted with mosquito abatement and vector control agencies in Marin/Sonoma, Alameda, Contra Costa and San Mateo Counties. The design has incorporated measures to avoid mosquito production or rodent habitat. Long term monitoring of the established marsh will be used to identify and implement needed drainage adjustments. Removal of rubble on the beach reduces potential rodent habitat. Ongoing litter removal will eliminate rodent food sources. NPS will continue to work with mosquito abatement districts during the design phase to identify appropriate monitoring and a contingency/response plan to address any future mosquito or rodent issues that may arise.

Q: Was the State of California Department of Fish and Game "Rare Find" data base list was used to verify all of the species listed in enclosure A?

A: This list was not specifically consulted, although NPS contributes to information included in this list. NPS consulted with US Fish and Wildlife Service as required by the Endangered Species Act.

Q: How will interpretation of natural and cultural resources be done, how will we involve the community in plan implementation, how will NPS involve non-traditional users?

A: In a separate process paralleling the site design for Crissy Field, park staff and GGNPA have worked with leading bay area educators and community groups to develop a community education and stewardship program to broaden and diversify public use of Crissy Field. It will build on existing middle and high school programs at the Presidio and Crissy Field, introduce an elementary school component, a mentor program, community outreach program, and stewardship program. An historic building south of the planning area is being considered

as an education facility and community center to support this effort. Other interpretation will use wayside exhibits, self guiding brochures and other traditional NPS interpretive tools.

Q: What efforts have you made to encourage non-automobile transportation to Crissy Field and provide parking for buses. How does this project project the proposed future rail connection to the Presidio?

A: The Presidio GMPA outlines an overall strategy to encourage the use of public transportation to reach Crissy Field. The proposed plan for Crissy Field accommodates this overall strategy. Parking for school buses will be accommodated in parking lot design. The GMPA states that NPS will consider the City's future efforts to extend the F-line streetcar to the Presidio, and identified Crissy Field as the most appropriate terminus. Although not included in the proposed action, it would not preclude this future connection.

Q: What will the surface of the promenade be?

A: The EA states that the surface of the promenade will be stabilized aggregate or crushed oyster shell, the exact surface will be determined in the detailed design. This surface will be stable enough to make it accessible but still softer than asphalt or concrete.

Q: What rubble will be buried on the site?

A: Asphalt will be cold-milled and recycled for off-site use. Broken concrete rubble and stone, substances which are inert, will be buried on the site under vegetated landforms located at the south edge of the site. This will keep these materials from having to be sent to a landfill and also provide a stable base for the landforms.

Q: What is the "orientation center" that is proposed for Marina Gate?

A: Neither the GMPA nor the Crissy Field Plan propose an orientation center at the Marina gate. The GMPA states that the Marina gate would be redesigned and would provide orientation. Orientation will consist of appropriate signage or wayfinding panels to provide information to visitors entering the Presidio.

Q: Why aren't parking fees levied on parking close to the beach?

A: The GMPA states that parking fees would be considered for some areas, but in other key sites such as Crissy Field, free parking is desired to avoid impacts of spillover into the neighborhood.

Q: How will the airfield be interpreted?

A: The specific methods to be employed in the design for interpretation of the airfield will include wayside exhibits. Future educational programs or the future relationship to the aviation museum are outside the scope of this design.

COMMENTS SUGGESTING ACTIONS OUTSIDE THE SCOPE OF THIS ACTION

Several comments were received suggesting actions outside the scope of this project including:

- change or eliminate automobile access on Crissy Field Avenue
- address the future use/landscape design at the historic hangar buildings
- include design for the water shuttle dock
- include rail access to the Presidio

waterbird

- extend the bike path to the Golden Gate Bridge
- address the impacts of proposed extension of Anza Street (included in GMPA, not part of this proposal)

Although these suggestions are outside the scope of this project, the proposed plan does not foreclose options to consider them in future planning efforts.

ADDITIONAL COMMITMENTS RECOMMENDED IN THIS REPORT

Recommendations of the Staff Report requiring commitments in addition to those in the EA include:

1. **Future design briefing:** The next phase of design will provide additional detail and specific design solutions in response to various public comments addressed in the staff report. At an appropriate time in this next phase, the NPS will provide a design briefing and update for the Commission and interested members of the public.
2. **Detailed design of boardsailing area:** NPS and GGNPA staff and the designers will work with representatives of the San Francisco Boardsailing Association on the detailed design of the parking and rigging areas and other amenities that support boardsailing at this site.
3. **Intersection improvements at Mason/Marina:** NPS will take a proactive role in exploring with the City interim improvements to the Mason/Marina/Lyon Doyle Drive intersection. Also, in the detailed design phase, NPS will look at improvements to Mason Street that could be made on NPS land at the Marina gate as part of this design, to improve the safety of automobiles, bicyclists and pedestrians.
4. **Future construction of culverted marsh channel:** If future maintenance frequency of the marsh channel becomes problematic, NPS will address construction of a culverted channel in a separate environmental document which evaluates other alternatives including expansion of the marsh or allowing it to become intermitently tidal.
5. **Helipad:** NPS will continue to consult and work collaboratively with SF Planning Department, Emergency Management Services Agency, Office of Emergency Service and other emergency response organizations to assist them in their efforts to effect a smooth transition from the routine use of Crissy Field as a helipad site.
6. **Marsh technical review:** During the design phase of the project, continued refinement of information regarding sediment input and other technical comments will be used to identify any necessary design refinements. Additional technical review will be obtained as appropriate.
7. **Mosquitos:** NPS will continue to work with mosquito abatement districts during the design phase of the marsh to identify appropriate monitoring and a contingency/response plan to address any future mosquito or rodent issues in the unlikely event that they arise.
8. **Remediation:**
 - New information regarding the Army's cleanup program will be evaluated as it becomes available to determine if significant new impacts would result. Additional environmental analysis and public review would be performed, if necessary.
 - NPS will continue to work with State and Federal regulators and the Army in the detailed design phase of the plan to coordinate plan implementation with cleanup, and identify any additional modifications/mitigation.
 - NPS will develop a Contingency Plan to address how hazardous substances encountered during the construction phase will be handled; request the Army to maintain emergency funds and

capability to respond to such discoveries; if necessary, will require contractor performing plan implementation to have capability of hazardous waste handling.

- NPS will review final RI in consultation with regulatory agencies to ensure that there are no new impacts that have not been addressed in the EA. Any new impacts will be addressed and mitigated where possible. During the design phase, NPS will perform additional independent analyses as needed.
- NPS will develop a Health and Safety Plan for the project to address worker safety during construction.

9. Dog walking: To address concerns raised by commenters regarding problems of cleaning up after dogs and appropriate dog behavior in voice control areas, NPS will work with the SPCA and dog walker representatives to begin an active education program as soon as possible. NPS will enforce voice control and cleanup requirements, and monitor the results of these efforts. This information will be periodically reevaluated and adjustments in management made where necessary, bringing any proposed changes in off leash dog access to the attention of the Advisory Commission.

10. Parking management: NPS will continue to develop and implement a parking management plan which will include special event parking management. Design details, including signage, will be developed to provide for appropriate separation of recreational space and parking at the east beach to assure that the intended parking for 400 vehicles is always accommodated. Appropriate management strategies will be developed as needed.

11. Mason St. Bike Path: will be widened to a minimum of 12 feet, and appropriate safety features such as striping, signs and separation will be identified in the detailed design.

12. Other design modifications:

During detailed design, the following modifications will be considered:

- Incorporation of a marsh channel pedestrian crossing close to the beach
- Modifications to the design of the overlook on the south side of the marsh to further minimize its intrusion, while retaining its important design and access values.
- Shift the location of the westerly access road to the east beach as far east as is safe and practical.
- Addition of 20 parking spaces immediately east of the Coast Guard Station, upon confirmation that the detailed design is compatible with historic, natural, scenic and recreational values at this site.

13. Cut through traffic on Mason Street: monitoring of cut through traffic on Mason Street will continue, to confirm the success of traffic calming features in the proposed design. As a separate action, NPS will give serious consideration to other measures to further reduce traffic on Mason Street, such as directional changes or closure of Crissy Field Avenue.

CONCLUSION

Staff has carefully reviewed and responded to substantive comments contained in the written and oral comment received during the public review period, as well as answered questions and responded to comments which are not substantive but for which a response is appropriate or relevant to the decision making process.

With the inclusion of the additional commitments identified in the Staff Report, we recommend that the proposed action be approved and a Finding of No Significant Impact be prepared.

