National Park Service, U.S. Department of the Interior
The Presidio Trust

Presidio of San Francisco, Golden Gate National Recreation Area
July 2003

Presidio Trails and Bikeways

Master Plan & Environmental Assessment

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LIST OF ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway Transportation Officials
ABAG	Association of Bay Area Governments
ac	Acres
ACHP	Advisory Council on Historic Preservation
Act	Presidio Trust Act
ADA	Americans with Disabilities Act
ADAAG	ADA Accessibility Guidelines
ANPR	Advanced Notice of Professional Rulemaking
APA	Administrative Procedures Act
Ave	Avenue
BAAQMD	Bay Area Air Quality District
BART	Bay Area Rapid Transit
BARTC	Bay Area Rapid Transit Council
BCDC	San Francisco Bay Conservation and Development Commission
BMPs	Best Management Practices
CalTrans	California Department of Transportation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHA	Cow Hollow Association
CHC	California Heritage Council
cm	Centimeters
Coastal Trail	California Coastal Trail
CWA	Clean Water Act of the United States
EAs	Environmental Assessments
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FPPHA	Fort Point and Presidio Historical Association
FR	Federal Register
ft	Feet
GG Transit	Golden Gate Transit
GGBHTD	Golden Gate Bridge, Highway and Transportation District
GGNPC	Golden Gate National Parks Conservancy
GGNRA	Golden Gate National Recreation Area
GIS	Geographic Information System
GMPA	General Management Plan
gpd	Gallons Per Day
h	Hectares
IMBA	International Mountain Bicycle Association
in	Inch/inches
km	Kilometers
lf	Linear Feet
LSRA	Lake Street Resident's Association
m	Meters
MCBC	Marin County Bicycle Coalition
mi	Miles
mm	Milimeters
mph	Miles Per Hour
MUNI	San Francisco Municipal Railway
NAPP	Neighborhood Associations for Presidio Trails Planning
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHLD	National Historic Landmark District
NHPA	National Historic Preservation Act
NPCA	National Parks and Conservation Association

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

NPS	National Park Service
PA	Programmatic Agreement
PAR	Trails Planning Association of Richmond
PHAN	Presidio Heights Association of Neighbors
PM10	Particulate Matter Less than 10 Microns in Diameter
PTMP	Presidio Trust Management Plan
ROMP	Responsible Organized Mountain Pedalers
RTC	Rails to Trails Conservancy
SFBC	San Francisco Bicycle Coalition
SFBT	San Francisco Bay Trail
SFTC	San Francisco Tree Council
SHPO	State Historic Preservation Officer
sf	Square Feet
sm	Square Meters
TDM	Transportation Demand Management
Trails Plan	Presidio Trails and Bikeways Master Plan
Trust	Presidio Trust
Trust Board	Presidio Trust Board
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
USPP	U.S. Park Police
VMP	Vegetation Management Plan

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

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Brenda Tharp

1 Introduction

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

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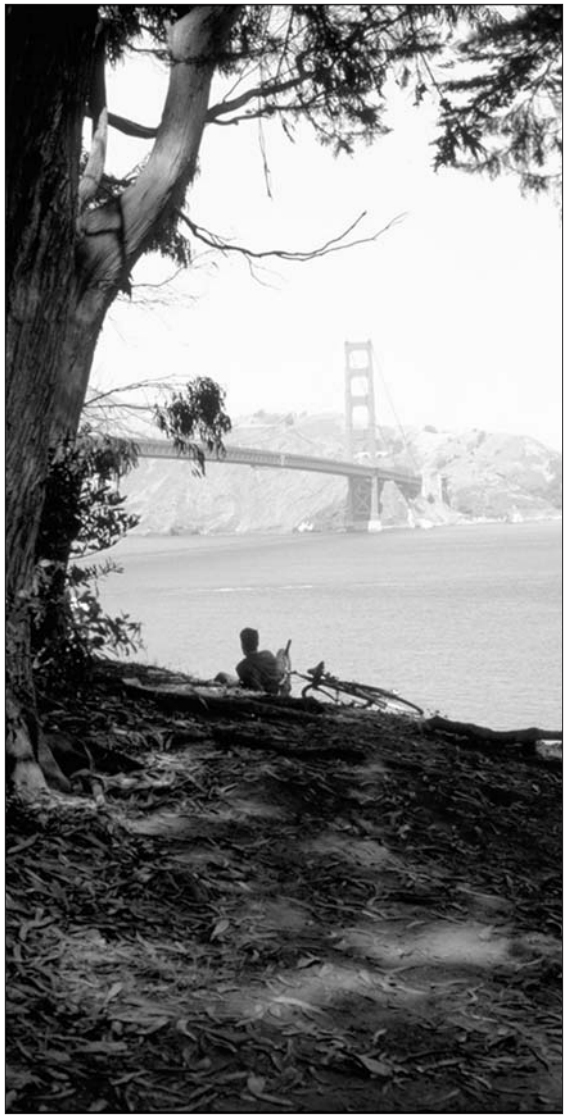


The Golden Gate Bridge from the Presidio

A Vision of the Future

The year is 2023, and as a beautiful summer day slides into evening, a group of people stop to enjoy a Pacific sunset at one of the Presidio's overlooks atop the coastal bluffs. The admirers include tourists, runners, a family out for a bicycle ride, a woman walking her dog, a wheelchair athlete taking a break from her training and a Presidio resident out for an evening stroll. All of them traveled to the overlook along the Presidio's well-maintained and interconnected network of pedestrian and multi-use trails and bikeways.

This idyllic scene had its start in 1999, when work began on a plan to develop a pedestrian and bicycle network that provides access to the Presidio's unique natural, cultural and historic resources.

The Master Plan

The Presidio Trails and Bikeways Master Plan (Trails Plan or plan) will provide park visitors, neighbors and Presidio residents with an interconnected, safe and enjoyable trails and bikeways system, while protecting and managing the Presidio's natural and cultural resources. The plan is a joint effort of the National Park Service (NPS) and the Presidio Trust (Trust), the two agencies responsible for managing the area. It will guide management of Presidio trails and bikeways for the next 20 years.

The vision for the plan was based on public and agency involvement and includes:

- Logical, comprehensive, user friendly connections
- A network of trails that provides a variety of trail experiences to meet user needs
- Access and challenge for different ages, skills and physical abilities
- Preservation of the valuable natural and cultural resources that make the Presidio an outstanding national resource
- A system that is part of a comprehensive transportation strategy that supports the use of alternative transportation and reduces dependence on cars
- Coordination with regional and national trails and local bicycle routes
- An environmentally responsible trail system that fully incorporates the best in sustainable design and construction practices
- Ongoing public involvement in educational and stewardship programs

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Analysis and Alternatives Development

The NPS and Trust carried out extensive on-site evaluation of the existing trail system, identifying physical and structural problems, use patterns, safety concerns and trail destination and connection opportunities. Presidio resources were evaluated to determine constraints to potential trail alignments and opportunities to correct existing problems or create new recreation, commuter routes and interpretive experiences. This analysis also reviewed trail corridors relative to geologic and hydrologic factors, biological resources, traffic safety, and cultural and scenic resources.

The analysis was mapped on a Geographic Information System (GIS) trail database so that trail alignments could be adjusted accordingly. If the resource analysis mapping indicated potential conflicts between resource protection and desired trail alignments, field checks were conducted to verify conditions and determine an appropriate course of action.

Based on this analysis, four trails and bikeways alternatives were developed for analysis in an Environmental Assessment (EA):

- **Alternative A,** the No Action Alternative, maintains the Presidio's current trails and bikeways network and assumes no comprehensive changes or new trail building
- **Alternative B**, the Mixed Use Alternative, features a mix of urban and natural visitor experiences, providing the widest range of trail types and connections for visitors (the Preferred Alternative)
- **Alternative C**, the Shared Use Alternative, provides the most wide, multi-use trails that accommodate large numbers of different types of visitors on the same trail
- **Alternative D**, the Dispersed Use Alternative, emphasizes separating pedestrians and bicycles, providing the most trails for pedestrians only

All the action alternatives (alternatives B, C, and D) provide a wide range of experiences, from urban promenade to quiet solitude, and propose about 36 km (23 mi) of newly designated trails in addition to existing trails. They differ in the amount of pedestrian-only versus multi-use trails and how those miles are dispersed throughout the Presidio.

Document Organization

This chapter provides project background, including analysis and alternative development, document organization, Presidio history, planning context, planning process, public involvement, changes to the plan, prioritization and phasing, and plan implementation. It also presents a background discussion on the plan's Environmental Assessment process under the National Environmental Policy Act (NEPA).

Chapter 2 describes the project's purpose, needs, goals and objectives.

Chapter 3 describes the Presidio's trails and bikeways classification system and design guidelines. The chapter also summarizes the Best Management Practices (BMPs) that would be incorporated in the action alternatives.

Chapter 4 reviews the four alternative trails and bikeways concepts developed for the Presidio and summarizes proposed trail modifications by trail corridor.

The Historic Cemetery

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Figure 1-1. *Regional Map*

Chapter 5 analyzes the environmental impacts of the alternatives, as well as cumulative impacts.

Chapter 6 provides reference and consultation information.

Chapter 7, Appendices A-D, include the Finding of No Significant Impact (FONSI), public comments and responses to those comments, Best Management Practices (BMPs) and natural resource conservation measures. With approval of the Finding of No Significant Impact, the NPS and the Trust have selected and adopted Alternative B as their blueprint for trails and bikeways in the Presidio.

The Presidio's History

The Presidio of San Francisco is part of the Golden Gate National Recreation Area (GGNRA). It is also a National Historic Landmark District (NHLD), the highest level of federal historic designation.

The park spans 1,491 acres on the northern tip of San Francisco, from the Pacific Ocean to the San Francisco Bay. The Presidio includes nearly 500 historic buildings and structures, a collection of coastal defense fortifications, a national cemetery, a historic airfield, a saltwater marsh, forests, beaches, native plant habitats (with federally listed species under the Endangered Species Act), coastal bluffs, miles of hiking and biking trails, and some of the most spectacular vistas in the world. Figure 1-1 illustrates the Presidio's regional context.

The Presidio has been shaped by many influences, including the Ohlone people who lived, gathered food and collected shellfish here, and the armies of Spain and Mexico. The Spanish established the Presidio as a military post in 1776, when Juan Bautista de Anza explored the peninsula and claimed the land for the king of Spain. When Mexico gained its independence from Spain in 1821, Mexican troops occupied the Presidio.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

In 1848, the U.S. Army took over the area and remained in control of the Presidio until 1994. The military base was then closed and the Presidio transferred to the National Park Service to become part of the Golden Gate National Recreation Area. Up to that time, the Presidio was the oldest continuously operated military post in the nation.

As part of the transition, NPS completed and adopted a comprehensive land use plan called the General Management Plan Amendment (GMPA) in 1994. The GMPA defined the direction for resource preservation and visitor use of the Presidio, and proposed that a comprehensive trails and bikeways plan be created.

In 1996, Congress passed the Presidio Trust Act. The Act created the Presidio Trust and gave it jurisdiction over the park's non-coastal areas (Area B) – about 80 percent of the Presidio land. The NPS retained jurisdiction over the coastal areas (Area A). Areas A and B are shown in Figure 1-2.

The Act included a mandate that the Trust achieve financial self-sufficiency by 2013. On July 1, 1998, the Trust assumed administrative jurisdiction over Area B; and in August 2002 the Trust adopted an updated management plan for Area B, called the Presidio Trust Management Plan (PTMP).

Planning Context

The Trails Plan is coordinated and consistent with Presidio and regional plans.

- The GMPA now serves as the comprehensive land use plan for Area A of the Presidio. A key goal of the GMPA is to increase pedestrian and bicycle use. It proposes a trail circulation plan to improve bicycle and pedestrian safety, resource protection, user access, visitor amenities and trail connections.
- The PTMP is the Trust's comprehensive land use plan for Area B of the Presidio. It defines objectives for resource preservation and enhancement and public access. The PTMP calls for a comprehensive bicycle and pedestrian network, and includes policies regarding transportation demand management, public use and accessibility.
- The Presidio's Vegetation Management Plan (Presidio VMP) was prepared jointly by NPS and the Trust and completed in 2001. It describes restoration and maintenance goals for three landscape zones: 1) natural, native plant zones; 2) cultural, planted or ornamental landscape zones; and, 3) planted, historic forest zones. All the proposed trails and bikeways improvements are consistent with the VMP.

The Trails Plan also considers relevant regional trails and bikeways plans to enhance connections to and through the Presidio. Plans considered include the San Francisco Bicycle Plan, the San Francisco Bay Trail Plan, the Juan Bautista de Anza National Historic Trail Plan, and Bay Area Ridge Trail planning documents.

Planning Process

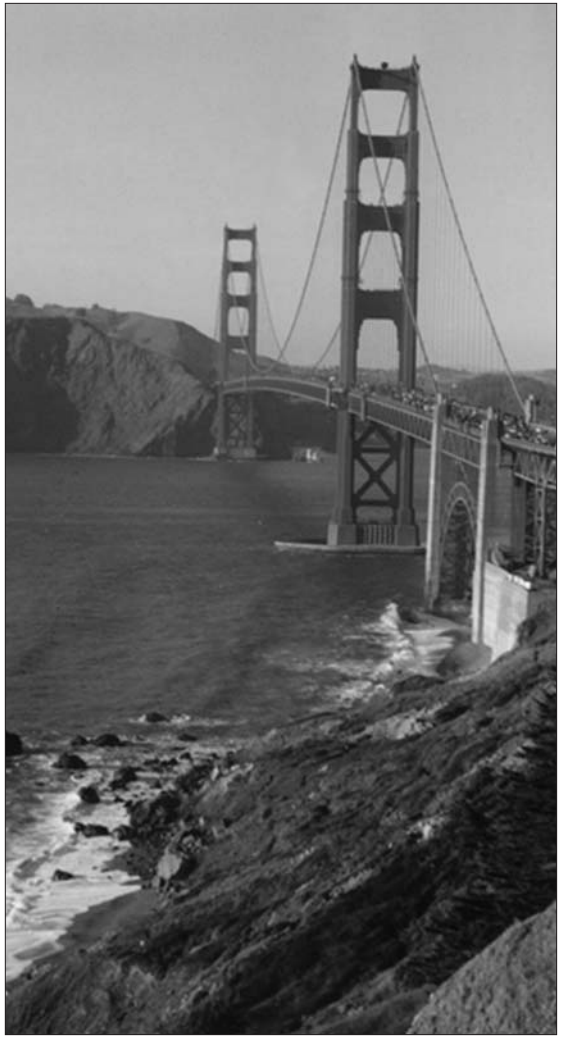
A multi-disciplinary core planning team consisting of NPS and Trust staff and consultants guided the planning process. The team consisted of experienced park planners and staff with expertise in natural and cultural resources, facilities management, interpretation, visitor protection, and transportation. The planning process included:

- Scoping and public outreach
- Reviewing existing conditions
- Field analysis of site conditions
- Analyzing opportunities and constraints
- Developing a range of alternatives
- Describing the probable environmental impacts of the alternatives

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Figure 1-2. *The Presidio of San Francisco*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment



The Golden Gate Bridge from the Presidio

- Preparing a plan
- Inviting the public to comment on the plan
- Responding to public comment and revising the plan
- Implementing the plan

Public Involvement

Scoping

NPS and the Trust invited and encouraged public comments between October 1999 and June 2000 to identify issues and develop goals and objectives for the Trails Plan. The scoping process included a public meeting, a series of focus group meetings, a design concept workshop, a survey of park users, and various opportunities for written comment. Key issues that emerged from public scoping have been considered and addressed in the Trails Plan or responded to in the Response to Comments provided in Appendix B. Major scoping issues included the following:

- Preserve and protect park resources
- Maintain and enhance the Presidio's wilderness feel
- Emphasize trail and park interpretation
- Improve trail signage and park wayfinding
- Develop a hierarchy of connected trails with permitted uses for each (e.g., restrict bicycles to certain trails)
- Improve on-street bicycle connections with striped and, where possible, separated bicycle lanes
- Enhance trail-related park amenities (e.g., provide more garbage cans, improve lighting at trailheads, construct restroom facilities)
- Calm park traffic and consider limited street closures (e.g., weekend closures)
- Provide additional parking at major trailheads
- Enforce existing and new park regulations
- Increase the number of designated off-street bicycle trails
- Develop sanctioned off-leash dog areas

Trails Plan

Prior to being made available to the public, the Trails Plan was featured in a cover article in the September 2002 edition of the *Presidio Post*, the Trust's monthly newsletter with a distribution of more than 14,000 individuals, organizations and agencies that are interested in activities at the Presidio. The article provided information on the Trails Plan planning process; the issues identified through the public scoping process and addressed

in the document; goals and proposed improvements within the plan; and public involvement opportunities. The Trails Plan was presented at a public meeting held at the GGNRA Citizen's Advisory Commission on October 22, 2002. In addition, three plan-related walks and bike rides were offered on October 26, November 1 and November 2, 2002 for the public to learn more about proposed trails and bikeways improvements.

At the time of release of the Trails Plan on November 14, 2002, about 1,500 copies of its Executive Summary were distributed to Presidio tenants and residents, local neighborhood organizations and groups, and project neighbors. The Executive Summary provided an overview and key elements of the Trails Plan, and information on the NEPA review process. About 150 copies of the entire Trails Plan were distributed to city, state and federal government agenices, public interest groups, neighbors and various individuals. The Trails Plan was also available from the NPS website (www..nps.gov/goga). The Presidio Trust provided a link from its web site (www.presidiotrust.gov). The public was invited to provide oral comment on the Trails Plan at a joint GGNRA and Presidio Trust public meeting held at the GGNRA Park Headquarters on January 28, 2003. Members of the public were also encouraged to submit written comments. Staffed tables were also set up at Crissy Field on February 2 and February 9, 2003 to distribute information and help the public understand the Trails Plan. The 90-day public review period ended on February 12, 2003.

Comments

NPS and the Trust received a total of 100 written comment letters, faxes and emails on the Trails Plan. In addition, 27 individuals provided oral comments at the January 28, 2003 public meeting. Fourteen of those individuals also submitted written comment letters. The names of agencies, organizations and individuals commenting on the Trails Plan, and a summary of comments and responses, are provided in Appendix B. Copies of all written comments and the transcript and minutes of the public meeting are available for review in the Trust's library.

In general, key issues raised by the public included:

- A desire for greater separation between pedestrians and bicycles on the more popular trails to avoid user conflicts
- A desire to retain many existing trails to enhance pedestrian access to the park
- A desire for better signage, especially on the regional trails and major bike routes, and provide traffic calming measures for user safety and comfort
- A desire for improved access to and interpretation of historic and cultural resources, such as a historic trail through the Main Post
- A desire for off-road mountain biking within the Presidio
- Support for the use of trails in the park by dog walkers (either on- or off-leash)

Changes to the Trails Plan

In responding to specific suggestions from the public comments, NPS and the Trust made several changes to the Trails Plan, including modifications to the Preferred Alternative as evaluated in the Trails Plan. These changes were summarized at a joint GGNRA and Presidio Trust public meeting on May 20, 2003, and at a Presidio Trust Board meeting on June 17, 2003. The changes are explained further within the Response to Comments included in Appendix B.

User Conflicts

In response to requests for greater separation of pedestrians and bicyclists, the number of multi-use trails decreased slightly, and in some cases the locations were modified. For example, the trail

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Public Scoping Meeting, December 1999

immediately adjacent to West Pacific Avenue is now proposed as a pedestrian trail, and the parallel trail through the Pacific Grove and below Julius Kahn Playground is proposed as a multi-use connection. The change is intended to reduce the potential for conflicts between bicyclists on the multi-use trail and users of the playground.

Pedestrian Access

In response to suggestions to provide more pedestrian-only trail experiences and to retain more of the existing social trails, the Trails Plan clarifies that the majority of social trails will be retained, in most cases as secondary pedestrian trails, except where the trails would have an adverse effect on overriding resource values. To this end, the Preferred Alternative now converts more social trails to designated trails, including the trail leading from Battery Marcus Miller to North Baker Beach, and a connection from the Washington Boulevard overlook to Lincoln Avenue. In addition, in response to comments requesting smaller, narrower multi-use trails, the width of multi-use trails within the Preferred Alternative could be reduced from between 2.4 and 3.0 m (8 and 10 ft) to 1.8 m (6 ft) to permit a more intimate visitor experience where appropriate.

Off-Road Mountain Biking

In response to comments supporting off-road mountain biking, the Trails Plan clarifies that access for off-road mountain biking is provided through the multi-use trails within the park. In addition, a new multi-use trail has been included, connecting the Broadway Gate via Pacific Grove to Arguello Boulevard and the Bay Area Ridge Trail. As several commentors indicated, this trail provides an off-road connection through the Presidio from the southeast corner of the park to the Golden Gate Bridge. The trail can also be used with other multi-use trails and bike lanes to create loops throughout the park. Due to potential unacceptable impacts on park resources and values, an unpaved, single-track mountain bike experience is not being considered as requested.

Dog Walking and Off-Leash Recreation

In response to commentors' suggestions, the Trails Plan now acknowledges that on-leash dog walking is a popular form of pedestrian use of trails in the park, and clarifies that Presidio visitors with dogs on leash are allowed everywhere that pedestrians are allowed, including all pedestrian and multi-use paths. The Trails Plan also refers to the ongoing rulemaking process to develop an alternative pet management regulation for off-leash dog walking within the Presidio and the GGNRA as a whole. No decision regarding off-leash dog walking within the park will be made until the rulemaking process is completed.

Signage

In response to commentors' requests to improve signage, the Trails Plan now provides specific information that may be included on trailhead signs and guides. Clear and concise roadway and trail signage will identify trails and bikeways, guide users to their destinations, and inform motorists of the presence of bicyclists and pedestrians. The number and type of signs will not, however, be so pervasive as to create "sign clutter" and detract from the park setting. The Trust and NPS will continue to incorporate traffic calming into plans for roadway and intersection improvements within their separate jurisdictions.

Specific Trail Modifications

The following changes (shown in Figure 1-3) have been made to the Preferred Alternative to incorporate suggestions offered during public comment:

- **Coastal Trail.** A pedestrian connection from Battery Crosby, across to the sand ladder, then down and across Baker Beach has been added. This will create a pedestrian corridor connecting the Golden Gate Bridge to the 25th Avenue Gate. The multi-use trail adjacent to Lincoln Boulevard and bike lanes on both sides of Lincoln Boulevard has been retained.
- **Bay Area Ridge Trail.** The Bay Area Ridge Trail now crosses Washington Boulevard farther to the west, and includes a new multi-use segment adjacent to Washington Boulevard, connecting to Nauman Road and Amatory Loop. A new pedestrian crossing at Park Boulevard, as well as a new trail connection in the forest from Park Boulevard to Battery McKinnon-Stotsenberg is also being provided. The Bay Area Ridge Trail segment through the Rob Hill Campground will now continue as a multi-use trail, and a new pedestrian spur has been added from north of Building 1347 to the east of Building 1202 in Fort Scott. The trail alignment has been changed to connect the Harrison Boulevard/Kobbe Avenue intersection to Ralston Avenue, rather than using Greenough Avenue, skirting Building 1340. The Kobbe Avenue/Merchant Road intersection will also be improved.
- **Park Boulevard Trail.** The Park Boulevard/ Washington Boulevard intersection has been modified to create a better crossing. The sidewalk is now proposed on the west side of McDowell Avenue rather than the east side, and a new pedestrian connection to Crissy Field between Stilwell Hall and Building 649 has been added.
- **Ecology Trail.** The connection from Quarry Road onto Arguello Boulevard has been improved for both wheelchair users traveling to Inspiration Point, and for users who wish to cross to the Presidio Golf Course.
- **West Pacific/Mountain Lake Corridor.** Both a pedestrian and a multi-use corridor will be provided in this heavy use location to reduce user conflicts. The locations of the multi-use trail and the pedestrian trail through Pacific Grove and Julius Kahn Playground have been changed so that the pedestrian trail will be adjacent to the road and the multi-use trail

Army Museum

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

will cut through the grove north of the playground.

- **Tennessee Hollow Trail.** A pedestrian trail will be located within the eastern tributary as part of the Tennessee Hollow trail corridor.
- **Lovers Lane.** The intersection of Lovers Lane and West Pacific Avenue will be modified to improve the spur to the Broadway Gate.
- **Presidio Promenade.** A consistent sidewalk route and bike lanes will be provided within this corridor, but not a continuous multi-use trail. The bike lanes will separate near the Cavalry Stables, using Patten Road for the westbound bike lane, and Lincoln Boulevard for the eastbound bike lane. Crissy Field Avenue will serve as a two-way multi-use path with no automobile traffic, subject to further Trust review and approval.
- **Wedemeyer Street/Battery Caulfield Road.** The connection from the 15th Avenue Gate to Washington Boulevard will include both an uphill bicycle lane and a pedestrian path (sidewalk) rather than a multi-use path to reduce user conflicts.

Plan Implementation

Trust and NPS will develop specific site plans for individual trails and bikeways as they implement the management actions recommended in the Trails Plan. Site-specific planning will address precise trail configurations and locations, trail width, surface, signs, trailheads, slopes, drainage and other physical attributes. These improvements will be developed within the context of the broader vision and BMPs identified in this plan. Additional compliance will be conducted as necessary.

Prioritization and Phasing

Individual trail and bikeway improvement projects will be implemented based on priority, phasing and funding. The Trust and NPS developed the following criteria for determining an implementation schedule:

1) Trails and intersections with safety concerns
2) Trails and intersections with personal security concerns
3) Trails currently causing natural resource and/or cultural resource damage
4) Trails with accessibility concerns
5) High use and highly desired trails
6) Trails where other construction activity is occurring (e.g., areas such as Letterman)
7) Trail segments that complete corridor connections
8) Trails that provide an outside funding or matching fund opportunity

The Trail Corridors map, Figure 4.2, illustrates the implementation priorities of the Trust and NPS. These corridors provide the major framework of connectivity within the Presidio, and respond to the list of implementation criteria above. Improvements to these corridors will improve accessibility, connectivity and safety throughout the Presidio. After the major network described in the Trail Corridors map is funded and implemented, the smaller connectors that form the complete Trails Plan will be implemented.

Corridor improvements will be made over time, and elements of each corridor will not necessarily be implemented concurrently. For example, installing striped bike lanes and pedestrian trails may precede constructing multi-use trails.

Environmental Assessment

The Council on Environmental Quality's (CEQ) regulations implementing the NEPA allow federal agencies to prepare an EA on any action

(when no Environmental Impact Statement is necessary) to assist agency planning and decision making (40 CFR 1501.3). The Trails Plan includes an integrated EA, which evaluates the potential environmental effects of four trails and bikeways alternatives.

While NPS and the Trust have separate jurisdictional responsibilities in the Presidio and separate authority to approve, veto or finance all or part of the Trails Plan (jurisdiction by law), the agencies collaborated in the preparation of this document to comply with NEPA. According to the CEQ NEPA Regulations, an EA is a concise public document prepared by federal agencies when a proposed action is not covered by a categorical exclusion or otherwise exempt from the NEPA. Both NPS and the Trust prepare EAs when they have insufficient information with which to determine whether a proposed action has the potential to cause significant environmental effects. An EA provides evidence and analysis to determine whether an Environmental Impact Statement (EIS) is required, aids a federal agency's compliance with NEPA when an EIS is not necessary, and facilitates preparing an EIS when one is necessary (40 CFR 1508.9(a)).

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

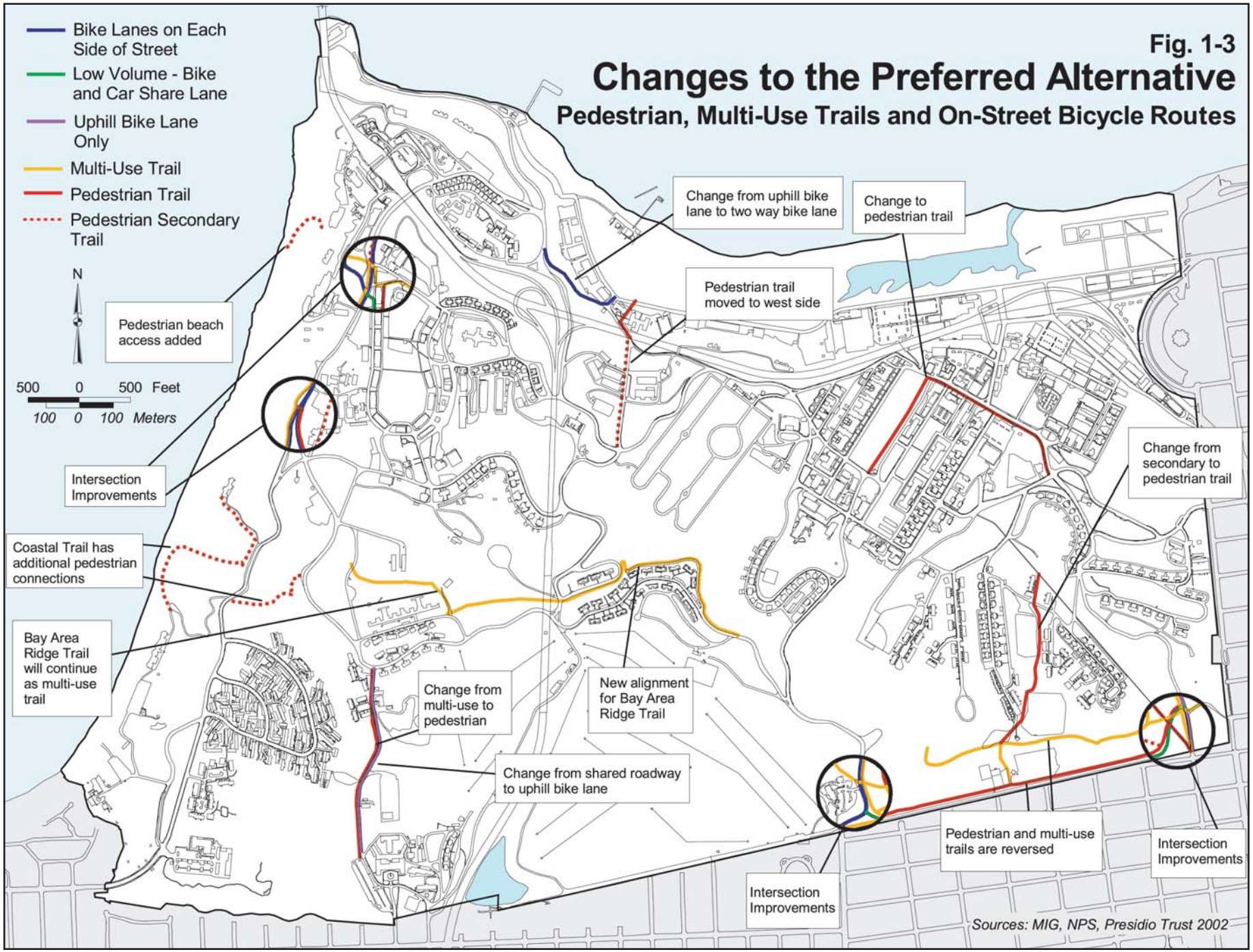


Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

2 Purpose & Need

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

This chapter explains the need for the Presidio Trails and Bikeways Master Plan and describes its purpose, goals, and objectives.

Project Purpose

The project will establish a comprehensive trails and bikeways network in the Presidio to effectively address the agencies' mandates for land and resource management, and to reflect the input received from the public and other agencies.

Project Need

The Presidio is a national park used and enjoyed by the public for its open spaces, vistas, scenery, opportunities for active recreation and exercise, and for its contemplative settings. The majority of Presidio trails evolved over time. The Trails Plan is needed to establish a well-functioning network of trails and bikeways, and to enhance the public's exploration and experience of the Presidio's open spaces and resources. The plan is also needed to improve connections between key features of the Presidio, increase accessibility, enhance visitor safety and encourage use of alternative modes of transportation.

Under existing conditions, visitors and park users often find some Presidio trails and bikeways challenging and difficult to navigate. Trails and bikeways can be confusing or inconsistent, and can be the cause of environmental degradation. In certain areas, the trails are causing erosion, fragmenting native plant communities and wildlife habitat, disrupting natural seeps and drainage, degrading views, and damaging historic coastal fortifications.

There are approximately 30.5 km (19 mi) of existing designated pedestrian and multi-use trails and bike lanes in the Presidio. There are many miles of additional unofficial trails and shortcuts that have been developed through informal use. These "social trails" criss-cross much of the Presidio, including natural areas and sensitive habitats. About 14.5 km (9 mi) of social trails have been mapped.

The GMPA directs NPS to identify pedestrian and bicycle route improvements that support the Presidio's recreational, natural, cultural, and historic resource goals. The PTMP states that the Trust will improve pedestrian and bicycle routes in Area B to promote convenient, safe and enjoyable walking and bicycling. The Trails Plan is needed to provide trails and bikeways design guidelines, and identify unofficial trails that should either be closed or incorporated into the official trails network. The plan is also needed to address the significant increase in users during the last decade.

Goals

Working together, the NPS and the Trust have developed goals for creating a safe and enjoyable Presidio trails and bikeways network. These goals are consistent with both the GMPA and the PTMP. The public scoping process helped further refine the goals and objectives. The five principal goals are:

1) Enhance public use, access and experience
2) Support resource preservation
3) Contribute to a comprehensive transportation strategy
4) Provide for sustainable design and construction
5) Promote ongoing public involvement through volunteer stewardship

Enhance Public Use, Access and Experience

The first goal of the Trails Plan is to accommodate a variety of recreational and educational activities, including walking,

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

running, cycling on a road or trail, rollerblading, dog walking, natural and cultural history exploration and quiet contemplation. A cohesive, clear network of trails and bikeways should provide a variety of route choices and challenges, as well as make desired connections throughout the Presidio for visitors, residents and tenants. Routes should travel through the Presidio's varied landscapes, including forests, coastal areas and the bayshore, and along historic buildings, batteries and other features. Accessible trails should be included where feasible. Access to views should be improved. Landscape buffer zones should be provided where trails travel along roadways to improve user experience. The public's experience should also be enhanced with information, services, shuttle stops and, in some cases, automobile parking at trailheads. Trail classifications and design guidelines should provide consistent guidance for meeting the needs of diverse users.

User safety is an important component of the visitor experience at the Presidio. Where feasible, separating pedestrian trails and multi-use trails from vehicular traffic lanes will improve the visitor experience. Bike lanes along vehicular roads will be clearly marked. Signs will alert motorists to the presence of bicyclists and pedestrians.

Walkers Enjoying a Trail in the Historic Forest

The following objectives support the goal of enhancing visitor use, access and experience:

- Provide a variety of trail experiences to meet diverse user needs ranging from contemplative solo activities to active group recreation
- Provide diverse interpretive and educational experiences
- Create consistent, well-made and sustainable trails
- Improve bikeways to minimize the potential for conflicts between pedestrians, bicyclists and cars
- Promote safety and security on trails and roads and at intersections
- Enhance the accessibility of trails, and provide supporting facilities
- Improve access to views of outstanding natural and cultural features

Support Resource Preservation

The resource preservation goal of the Trails Plan is focused on preserving the valuable natural and cultural resources that make the Presidio an outstanding national park. Resource management objectives of both agencies include protecting sensitive plant and animal species, preserving unique cultural resources (including historic earthworks, batteries, buildings and archeologic resources), and protecting unique cultural landscapes. The plan proposes trail realignments, improved management and maintenance of trails, and

specialized trails (such as permeable paving and boardwalks) to minimize impacts on natural and cultural resources.

The following objectives support the goal of resource preservation:

- Coordinate and integrate trail design with natural and cultural resource planning
- Upgrade or remove informal social trails
- Protect and enhance natural resources
- Protect and enhance cultural resources

Contribute to a Comprehensive Transportation Strategy

Another plan goal is to promote alternative forms of transportation and discourage private automobile travel within and to the Presidio. An attractive, well-functioning trail system that provides convenient connections between housing and work areas and is coordinated with transit and shuttle stops can increase use of alternative transportation modes. Additionally, trails and bikeways will connect to regional trails, such as the California Coastal Trail, the Bay Area Ridge Trail, the San Francisco Bay Trail, and the Juan Bautista de Anza National Historic Trail. Providing both loop trails and through trails should encourage pedestrian and bicycle use.

The following objectives support the goal of contributing to a comprehensive transportation strategy:

- Establish a trails and bikeways network to make direct connections, link main activity and residential areas, and provide key connections to the City of San Francisco
- Promote recreational and commuter bicycle use to, through, and within the Presidio as an alternative to automobile use
- Provide a system of trailheads that includes bicycle and/or vehicle parking and corresponds to transit or shuttle stop locations
- Encourage alternative forms of transportation and facilitate and coordinate movement from one form of transportation to another, including buses, shuttles, bicycles and foot-traffic

Encourage Sustainable Design and Construction

The Trails Plan is consistent with NPS and Trust goals for sustainability and environmental protection.

Prior planning recommendations call for park facilities, including trails and bikeways, to be designed, constructed, retrofitted and operated to minimize adverse effects on natural and cultural resources and to be reflective of their environmental setting.

NPS defines sustainability as the capability of natural and cultural systems to maintain themselves over time (NPS 1993). Many factors affect trail sustainability, including management policies, design, construction techniques and maintenance. The following objectives support sustainability:

- Minimize disturbance during and after construction
- Design trails for durability, erosion control and minimal environmental impact
- Use sustainable and renewable materials for trail construction, including both recycled and recyclable materials from the Presidio

Runners on the Golden Gate Promenade

- Design low-maintenance trails and coordinate trails and bikeways upkeep with a viable, high-quality maintenance program
- Consider re-use of disturbed areas for trail alignments such as along existing roads and social trails

Promote Ongoing Public Involvement through Volunteer Stewardship

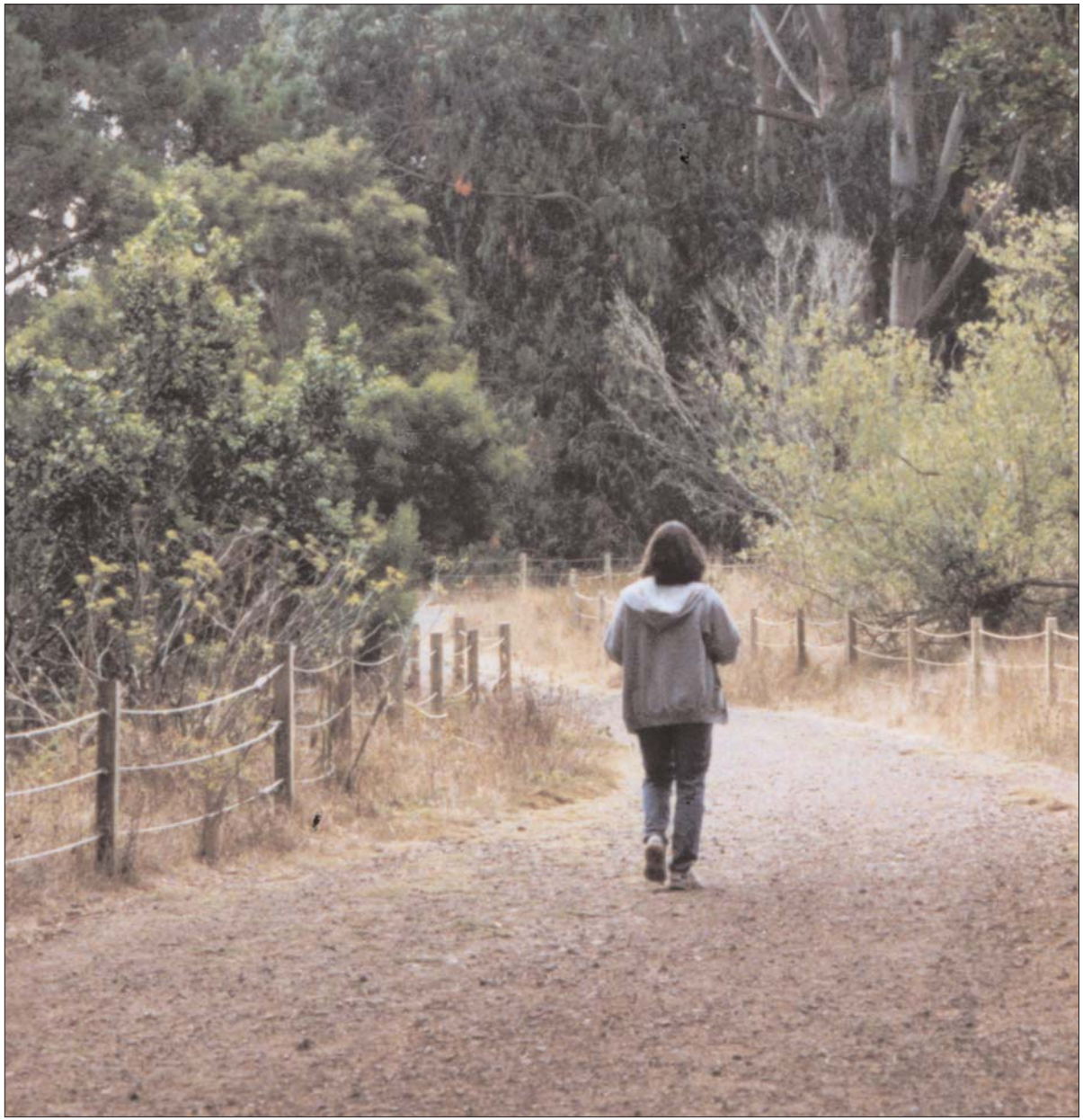
The final Trails Plan goal is to develop long-term partnerships with community groups, schools, park neighbors, and other trail users.

Public participation provides opportunities for education and community involvement and may include funding, building and maintaining trails, and monitoring their long-term use. Any long-term trail monitoring and maintenance strategy will require collaboration with visitors, neighbors and volunteers.

To promote stewardship activities, key objectives include:

- Foster volunteer programs and other partnerships
- Promote interagency cooperation and volunteer coordination
- Create training and educational opportunities

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment



3 Trail Classifications & Design Guidelines

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

This chapter desribes the Presidio's trails and bikeways classification system and design guidelines, including accessibility guidelines. The classification system and design guidelines are flexible and anticipate that constraints defined by resource protection goals, safety or topography will, on occasion, require an alternative trail design within identified corridors.

User Groups

To ensure that all visitors are served, the needs of many different bikeway and trail users are addressed:

- Pedestrians of all kinds, from those seeking physically challenging walks to those who want a convenient connection between two activity centers. This group includes recreational walkers, commuters and exercisers of different abilities. Dog walkers who walk with their dogs on-leash are included as pedestrians, and would have access to all pedestrian and multi-use paths.
- Bicycle commuters who live or work in the Presidio or pass through the Presidio want a direct, easy-to-use route to their workplace. Most of these bicyclists would prefer bike lanes or low-volume roadways and routes that minimize their travel time.
- Serious recreational cyclists who often are out for a long ride and are not intimidated by hills or traffic. This group usually prefers wide shoulders or bike lanes, but the lack of these facilities does not affect their choice of a route. Unlike bicycle commuters, this group puts more importance on a scenic route where they can ride fast than they do on time-savings.
- Family or touring bicyclists, with or without children, who want to see the sights and the beauty of the Presidio. Their choice of routes is affected by traffic and hills, and just as importantly, the route's access to the Presidio's major attractions, such as the Golden Gate Bridge, Fort Point, Crissy Field, the Golden Gate Promenade and the NPS Visitor Center. They would prefer to be on multi-use trails or roadways with little or no traffic. Often these users may not ride at all unless bikeways meet these conditions.
- Skaters and skateboarders who are out for a recreational skate or ride can be accommodated on hardened pedestrian and multi-use trails.

Recreation or travel with dogs off leash is currently prohibited in all National Parks within the National Parks system. However, in response to public comment, there is ongoing review of this issue within the GGNRA. The process to change this regulation is called an Advanced Notice of Proposed Rulemaking. Under this process, the policy is currently being reviewed at a national level to consider a policy and framework for allowing dogs off leash in the Presidio and the rest of the GGNRA. Additional discussion of dog walking and the rule-making process is provided in the response to comments in Appendix B.

Trails and Bikeways Classification System

The three basic trail classifications of the Trails Plan are *pedestrian trails*, *multi-use trails*, and *bikeways*.

An accessible trail can be either pedestrian or multi-use. Although not a separate classification, accessible trails have unique characteristics. Two subcategories, "outdoor recreation access route" and "beach access route," have specific legal requirements. They are therefore included in Table 3-1, which summarizes major trail type characteristics and design guidelines.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

	PEDESTRIAN TRAILS		MULTI-USE TRAILS	BIKEWAYS		ACCESSIBLE TRAILS		
	Primary Trails	**Secondary Trails**	**(Class I)**	**Striped Bike Lanes (Class II)**	**Shared Roadway (Class III)**	**Pedestrian or Multi-use**	**Outdoor Recreation Access Route**	**Beach Access Route**
Description	Major inter-connected routes to provide access to important Presidio destinations	Secondary routes to provide users access to unique cultural, historical, natural and scenic resources	Major routes between destinations for pedestrians, slower-speed recreational cyclists, and other users as a shared trail separated from auto traffic	Bike lanes on each side of the roadway or uphill bike lane only	Shared routes (auto and bicycle) on service roads and low auto volume roadways	Accessible portions of pedestrian and multi-use routes	A continuous, unobstructed path that connects accessible elements within a picnic area, campground or designated trailhead	An accessible route to link nearby main trail routes to some of the Presidio's important coastal beaches
Surface	Soft surfaces and hard surfaces	Soft surfaces and hard surfaces	Generally hardened surfaces with pedestrian shoulders, which are soft-surface walking or running paths	Pavement	Pavement surfaces may be upgraded	Firm, stable and slip-resistant	Firm, stable and slip-resistant	Boardwalk or other firm, stable and slip-resistant surface
Width	Between 1.2 m and 1.8 m (4 to 6 ft)	Typically narrower than primary trails and between 0.6 m and 1.2 m (2 to 4 ft), except 0.9 m to 1.5 m (3 to 5 ft) for accessible trails	From 1.8 to 3 m (6 to 10 ft) hardened surfaces and 0.3 to 0.6 m (1-2 ft) pedestrian shoulder on both sides	Typically 1.5 m (5 ft) wide; steep uphill segments may be wider; minimum of 0.9 m (3 ft) where design conditions allow	NA	1.5 m (5 ft) or greater with a minimum of 0.9 m (3 ft)	At least 1.5 m (5 ft) wide	At least 1.5 m (5 ft) wide

Table 3-1. *Trails and Bikeways Classification*

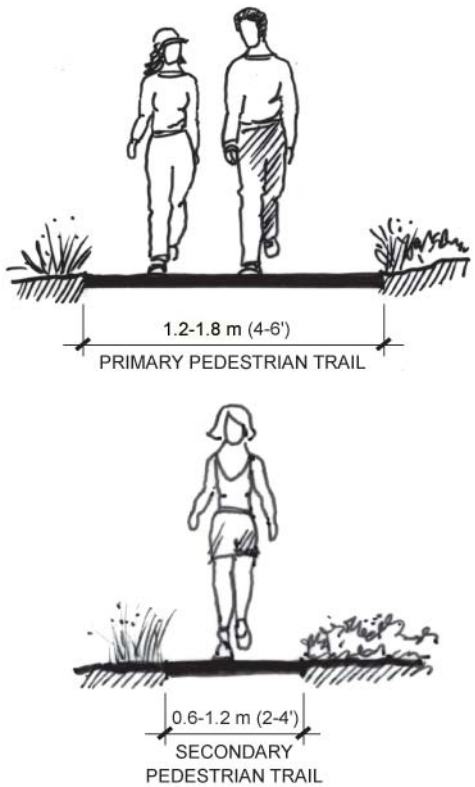


Figure 3-1. *Pedestrian Trails*

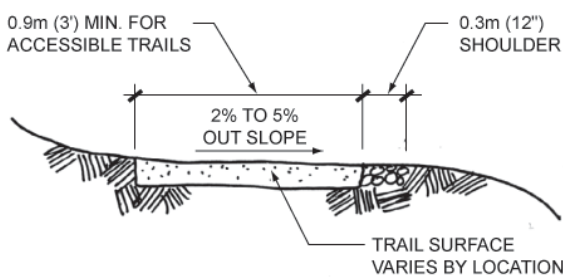


Figure 3-2. *Pedestrian Trail Detail*

Pedestrian Trails

The plan classifies pedestrian trails as primary or secondary (Figure 3-1).

- Primary trails occur in the major trail and road corridors, and provide connecting routes to important Presidio destinations. Wider trails accommodate a larger number of trail users
- Secondary trails allow visitors, residents and tenants to experience many of the Presidio's less visited environments and the many cultural, historical, natural and scenic resources

Primary and secondary pedestrian trails are designed for a wide range of pedestrian uses (Figure 3-2). Typically, secondary trails are soft-surfaced, single-track footpaths, while primary trails are wider and often hard-surfaced. Both would have firm, slip-resistant surfaces.

Surface

Surfaces would be designed to encourage users to stay on trails, avoid erosion, and to maintain soil cover over tree and other plant roots.

Depending on the intended use of the trail, underlying soil, and nearby resources, trail surfaces could be soft (permeable) or hard (with varying

Sidewalks and Designated Trails

There are many sidewalks throughout the Presidio. Many of these sidewalks are not part of the proposed designated trails system. The Trails Plan designates trail corridors, which include segments of, but not all, Presidio sidewalks. Trail design guidelines do not apply to those sidewalks that are not part of the trail system.

A Presidio Sidewalk

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Social Trails

The classification system does not include social trails, which are unofficial, unplanned, informal paths or shortcuts that have been created by consistent human use. Over 15 km (9 mi) of social trails have been mapped, and many more exist. In some cases, these unplanned and non-maintained trails cross through areas of fragile natural and cultural resources. Although they may appear no different than other trails to users, social trails tend to have a greater impact on natural, cultural, and historic resources than routes that were designed and constructed as trails. The Trails Plan includes the following social trail recommendations:

- Upgrade many social trails to an official pedestrian or multi-use trail, including making improvements to reduce impacts on park natural and cultural resources, increase visitor safety and enjoyment and increase accessibility for persons with disabilities.
- Close some social trails to increase visitor safety and/or protect Presidio natural, cultural and historic resources.
- Replace some social trails with a designed trail in the same general area to maintain important connections while enhancing public safety and resource preservation.

degrees of permeability). For example, the trail surface might be on boardwalks, designed to protect resources or provide access in areas with unstable surfaces, such as beaches or sandy soils.

Examples of soft surfaces include soil, crushed rock, sand, mulch and rubber-based paving. Hardened surfaces include asphalt (permeable or impermeable); concrete; crushed rock or soil stabilized with resin products or cement; and open or solid masonry such as brick, "Turf-block" or other cast concrete products. Other hard surfaces include boardwalks, bridges, steel grates or plates.

Width

Pedestrian trails would vary in width. Typically, clear tread widths of trails could range from 0.6 m to 1.8 m (2 ft to 6 ft).

Grades

Pedestrian trails would be designed with grades ranging from flat to steep to provide trail users with a variety of challenges. In general, steep trails would have hardened surfaces to avoid erosion and boardwalks would have easy grades. Pedestrian trails may include stairs or bridges.

Buffers

Where feasible and appropriate, a planted or constructed buffer would separate pedestrian trails from roadways.

Access

Both the proposed pedestrian and multi-use trail network would also increase trail accessibility for people with disabilities, although not all pedestrian and multi-use trails would be fully accessible because of steep grades and other constraints.

Multi-Use Trails

Multi-use trails offer safe, enjoyable opportunities to travel through the Presidio for pedestrians, slower-speed recreational or family bicyclists, non-motorized wheeled sports users and groups with a combination of the above (Figure 3-3). These trails would provide major connections between important Presidio destinations, entry gates and other local, regional and national trail systems. Multi-use trails are the same classification as CalTrans Class I bike paths (CalTrans 2001).

All multi-use trails proposed in this plan would be designed to meet or exceed the minimum design standards of American

Association of State Highway and Transportation Officials (AASHTO 1999). Where width is available, trails will be designed to meet recommended rather than minimum widths. Exceptions will be considered if a trail is unable to meet the minimum AASHTO design standards due to topography, natural or cultural resources or other constraints. Consideration will include an evaluation of the potential impacts and benefits of the project and development of appropriate design elements to minimize impacts and to provide a safe non-standard facility.

Multi-use trails would be located on existing former roadways, or in previously developed areas whenever feasible. All new multi-use trails would be designed to minimize impact on natural or cultural resources. Some former service roads currently used as informal, multi-use trails would be developed as official multi-use trails.

Surface

Multi-use trails generally have hardened surfaces and adjacent soft-surface pedestrian shoulders that can be used as walking or running paths. Hardened surfaces for most multi-use trails could consist of asphalt or granular aggregate material stabilized with a binder. Soft-surface portions could be fine granular stone (crushed rock or decomposed granite). Trails for skaters would have a smooth, paved surface.

Width

Typically, multi-use trail corridors range from 2.4 m to 4.2 m (8 ft to 14 ft) wide. The trail corridor would have a hard surface, 1.8 m to 3 m (6 ft to 10 ft) wide, with 0.3 to 0.6 m (1 to 2 ft) wide soft-surface pedestrian shoulders on one or both sides. The preferred clear tread width of hard surfaced multi-use trails is 2.4 m (8 ft). Minimum clear tread width would be 1.8 m (6 ft).

Grade

In general, multi-use trails would have easy grades. Minimum running slopes of no more than 1:20 (5 percent) provide greater accessibility for persons with disabilities and bicyclists. Where steeper grades are needed, the AASHTO guidelines would apply. Where feasible, cross slopes will be kept to a minimum of 1:50 (2 percent), unless a curve requires a greater cross-slope for safety or to ensure proper drainage.

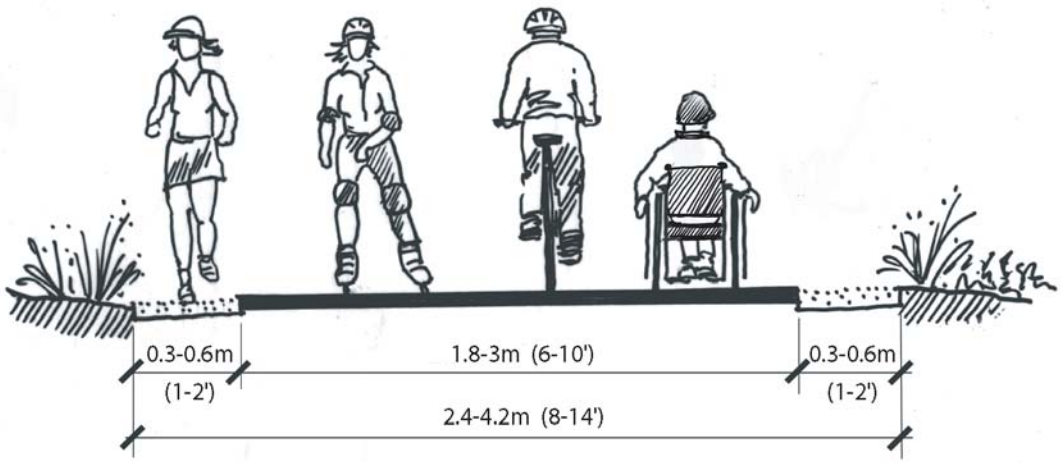


Figure 3-3. *Multi-Use Trail*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Edge Protection

Some types of edge protection, such as raised surface elements, curbs, or rails that are immediately adjacent to the paved surface, may be of concern to bicyclists and skaters. Proposed multi-use trails would address the special safety needs of these users by providing a wide path of travel away from curbs or rails.

Obstacles

Bicyclists have a higher vertical profile than do other trail users. For this reason, a minimum of 3 m (10 ft) vertical clearance would be provided on multi-use trails. Tread obstacles such as steps or waterbars would typically be avoided on multi-use trails. Openings large enough to permit wheelchair or bicycle wheels to enter would be avoided. Drainage grates generally would be located outside the trail. If this is not feasible, grates would be designed for wheelchair and bicycle safety. For example, grates that use small openings perpendicular to the path of travel would be selected.

Buffers

If feasible and appropriate, a planted or constructed buffer would separate multi-use trails from roadways.

Bikeways

Nearly all Presidio roads (whether they have pavement markings or not), are currently open for bicycle use. In the Trails Plan, Presidio bikeways would continue to make important connections to City Bike Routes and other local and regional bikeways.

Bikeway classifications used in this plan are consistent with federal guidelines (AASHTO 1999). However, many Presidio bikeways connect to bikeways and bike routes outside the park. For this reason, and to provide information in a context that is familiar to most readers, the plan also identifies Caltrans bikeway classifications for each type of bikeway (Caltrans 2001). Only on-street facilities (Class II and III bike routes) are considered in this classification. Class II bikeways are marked on-street bike lanes. Class III bikeways indicate a signed bike route where bikes and cars share a lane. Off-street bikeways (Class I) are addressed as multi-use trails. Only designated bikeways are mapped in this plan, although nearly all roadways in the Presidio would continue to be open to bicycle use.

Road width constraints and volume of traffic are the primary determinant for the type of bikeway provided. Where possible, striped bike lanes would be provided on both sides of major roads. In a few instances where road width is constrained, only uphill bike lanes are proposed. In some instances, roadways would be incrementally widened to provide a safe bikeway in each direction. Striped wide shoulders may be appropriate for Class III bike routes on shared roadways where width constraints preclude bike lanes. On some low-volume streets, bicyclists would continue to share roadways with motor vehicle traffic without lane or shoulder marking. Presidio bikeways would provide a range of difficulty, from easy to challenging. The Trails Plan would improve roadway safety for bicyclists, and ensure that there are no gaps in the bicycle circulation network.

Bikeway Design

All bikeways proposed in this plan would be designed to meet or exceed the minimum design standards (AASHTO 1999). If paved width is available, bikeways will be designed to meet recommended rather than minimum widths. Exceptions will be considered if a trail is unable to meet the minimum AASHTO design standards due to topography, natural or cultural resources, or other constraints. Consideration will include an evaluation of the

potential impacts and benefits of the project and development of appropriate design elements to minimize impacts and to provide a safe non-standard facility.

The Trails Plan recommends bikeways to accommodate all bicycle user groups, conform to roadway constraints, and accommodate varied traffic volumes on roadways. These recommendations address major streets used mainly by experienced cyclists – such as Presidio Boulevard and Lincoln Boulevard – as well as roads used by family and recreational cyclists. Providing continuity on street-based bikeways for recreational cyclists is challenging. Some cyclists will not use busy roadways to fill gaps in their routes. Therefore, some multi-use trails would be provided along busy roadways, such as Lincoln Boulevard. The Trails Plan includes the following bikeway design guidelines:

- *Marked bike lanes on each side of the roadway (Class II):* Bike lanes 1.5 m (5 ft) wide or greater are preferred. AASHTO guidelines allow for narrower bike lanes in certain circumstances. Bike lanes would be provided and striped on each side of the roadway (Figure 3-4).
- *Marked bike lane in the uphill direction only (Class II):* In constrained sections on sustained grades – for example, on Arguello Boulevard and Presidio Boulevard – to provide bike routes in both directions without widening the road, an uphill bike lane would serve as a climbing lane for bicyclists (Figure 3-5). Downhill bicyclists would be permitted to use the signed, full traffic lane with cars. Bicycles going downhill reach nearly the same speed limit as motor vehicles. In addition, it can be unsafe to confine fast-moving downhill

Contraflow Cyclist on One-way Segment of Lincoln Boulevard

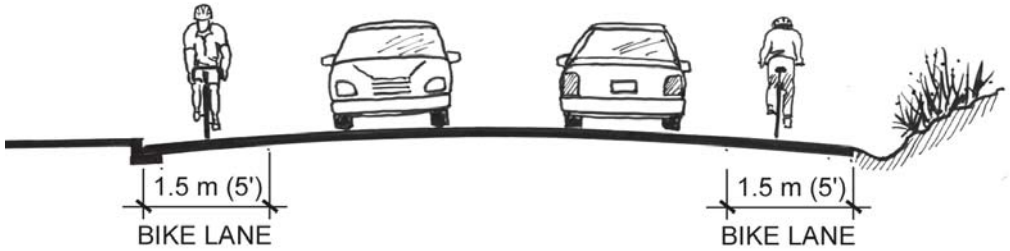


Figure 3-4. *Typical Bike Lanes on Roadway*

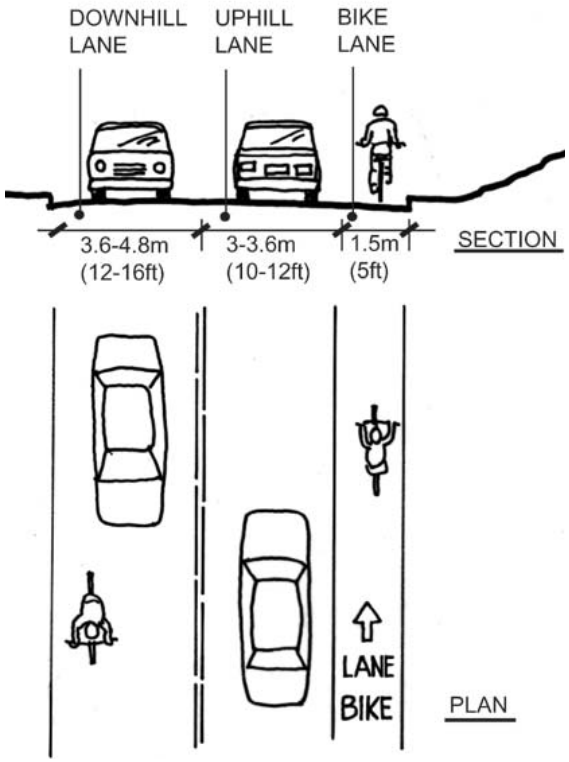


Figure 3-5. *Uphill Bike Lane*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

bicyclists to a narrow bike lane at higher speeds.

- *Marked bike lanes on one-way streets (Class II):* Since Presidio streets are not laid out in a grid pattern, some existing one-way road sections require bicyclists to travel significantly out of their way. This encourages some bicyclists to ride against traffic. Circulation for bicycles in both directions is needed on some of these one-way sections. For example, a short segment of Lincoln Boulevard near the Main Post currently is striped to have a "contraflow" (against the direction of auto traffic) bike lane. Contraflow and with-flow bike lanes would be considered for the one-way sections of Crissy Field Avenue, and Washington Boulevard between Kobbe Street and Lincoln Avenue.
- *Shared roadway (Class III bike routes):* Some roadways and service roads have low traffic volumes that are not likely to increase in the future. On those roads, bicyclists and motorists can share the road without marked bike lanes and/or shoulders (Figure 3-6). These segments are often short and traffic speeds are correspondingly low. In these cases, the roadway would be signed as a bike route. Signage per AASHTO guidelines or state motor vehicle code would notify motorists that bicyclists are allowed full use of the lane. Other traffic calming measures will be provided where feasible.

Surface

Typically, bikeways would occur on existing pavement. If a road is widened to accommodate a bikeway, the new bikeway would be constructed of the same material as the roadway. Where feasible, bikeways would be designed with smooth surfaces and would be free of obstacles such as drainage inlet grates. Grates in bikeways will be to Caltrans Standard Plan D778B.

Grade

Bikeway grades would follow existing roadway grades and vary from nearly flat to very steep.

Signs

Bikeways would be signed to indicate appropriate usage for cyclists and motorists.

Buffers

Class II bike lanes would be separated from motor vehicle traffic by bike lane markings rather than raised pavement markings or raised barriers, because those can cause steering difficulties for bicyclists.

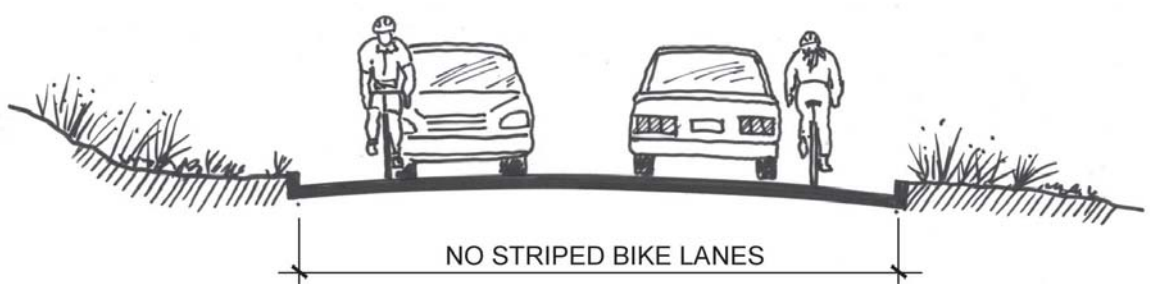


Figure 3-6. *Shared Roadway*

Accessibility

In this plan "access" and "accessibility" refer to opportunities for people of differing abilities to travel to a site or along a trail. The ADA Accessibility Guidelines (ADAAG) provide a set of uniform design requirements that ensure access to public and commercial spaces. These guidelines already provide general technical requirements for public and commercial

facilities, such as restrooms, parking and accessible routes of travel that also apply to recreation facilities. The Federal Access Board has published new guidelines for accessible trail construction and trail rehabilitation, which will be incorporated into the existing ADAAG guidelines (Regulatory Negotiation Committee 1999). The guidelines provide additional guidance specific to trails that address the slope and cross-slope of the trail, resting intervals and passing areas, the width and stability of trail surface and signs that alert visitors with disabilities to trail conditions. These guidelines apply where feasible to the pedestrian trails and multi-use trails proposed in this plan. The following are instances when these guidelines would not be feasible:

- If compliance would cause substantial harm to cultural, historic, or significant natural features or characteristics
- If compliance would substantially alter the nature of the setting or the purpose of the trail
- If compliance would require construction methods or materials that are prohibited by law or
- If compliance would not be feasible due to terrain or prevailing construction practices

If a trail cannot meet the guidelines because of any of the above exceptions, efforts would be made to ensure that as much of the trail as feasible is accessible. These exceptions allow steep trails or trails with steps to be developed in some areas where existing conditions prohibit constructing accessible pedestrian trails. Signage at trailheads would provide information about trail conditions to visitors with disabilities.

Accessible Trails

Accessible pedestrian and multi-use trails would meet these additional requirements:

Surface

Soft surfaces will be stabilized to provide increased trail accessibility. Trails can be stabilized and strengthened using amendments of fine granular stone (also referred to as crushed rock or decomposed granite) or recycled materials. Hard surfaces may include soil treated with soil stabilizers, asphalt, concrete or boardwalk (wood, recycled wood or plastic lumber).

Width

The minimum width of accessible trails is 0.9 m (3 ft). When trails have less than 1.5 m (5 ft) of clear tread width, passing spaces will be provided at least every 300 m (1000 ft). Boardwalks will have a minimum clear tread width of 1.5 m (5 ft).

Grade

No more than 30 percent of the total length of a designated accessible trail will exceed a running slope of 1:12 (8.3 percent) or have a cross slope greater than 1:20 (5 percent). In general, the running slope of an accessible trail would be less than 1:20 (5 percent), however, steeper trails could be considered accessible in the following conditions:

- Maximum "running slope" (in the direction of travel) of 1:12 (8.3 percent) for 60 m (200 ft) with resting intervals
- Maximum running slope of 1:10 (10 percent) for 9 m (30 ft) with resting intervals
- Maximum running slope of 1:8 (12.5 percent) for 3 m (10 ft) with resting intervals

Resting Intervals

Due to the Presidio's steep terrain, existing trails have running slopes close to the maximum for accessible trails. Resting intervals, properly spaced, provide a greater degree of accessibility

for persons with disabilities. These resting areas would be at least 1.5 m (5 ft) long and as wide as the trail, with a preferred cross slope of 1:50 (2 percent) and a maximum cross slope of 1:20 (5 percent).

Edge Protection

Edge protection is often provided on trails to increase safety. If it is provided, it would be at least 75 mm (3 in) high. A lower surface might not be obvious or detectable to people with limited vision who use canes.

Obstacles

The presence of any of the following obstacles would prevent a pedestrian trail from being a designated accessible trail and should be minimized:

- Openings in trail surfaces that allow the passage of a 13 mm (½ in) diameter sphere, or elongated openings that are parallel to the dominant direction of travel that allow the passage of a 6.5 mm (¼ in) diameter sphere
- Protruding objects, for example, signs that are less than 2 m (80 in) above the trail surface
- Tread obstacles such as water bars greater than 50 mm (2 in) high. On trails with running slopes and cross slopes less than 1:20 (5 percent), tread obstacles, even those with beveled edges, should not be greater than 75 mm (3 in) high

Outdoor Recreation Access Routes

An outdoor recreation access route is a continuous, unobstructed path designated for pedestrian use. It connects accessible elements at picnic areas, campgrounds, designated trailheads and designated overlooks. In general, the recommendations for outdoor access routes are identical to those for accessible trails, with the following exceptions:

- Passing spaces would be provided at least every 60 m (200 ft) when trails have less than a 1.5 m (5 ft) clear tread width
- Cross slopes of these routes would not exceed 1:33 (3 percent), except in areas where steeper cross slopes are necessary to ensure proper drainage. Those cross slopes would not exceed 1:20 (5 percent)
- Maximum running slope would be 1:20 (5 percent)
- No surface obstacles greater than 25 mm (1 in) high would be permitted, or 50 mm (2 in) if the edges of the obstacle are beveled

Beach Access Routes

Beach access routes link nearby main trail routes to the high tide line (Figure 3-7). They would be provided in all action alternatives. These routes would provide access near the high-tide line at Baker Beach and Crissy Field. In general, the recommendations for beach access routes are identical to those for outdoor access routes, with the following exceptions:

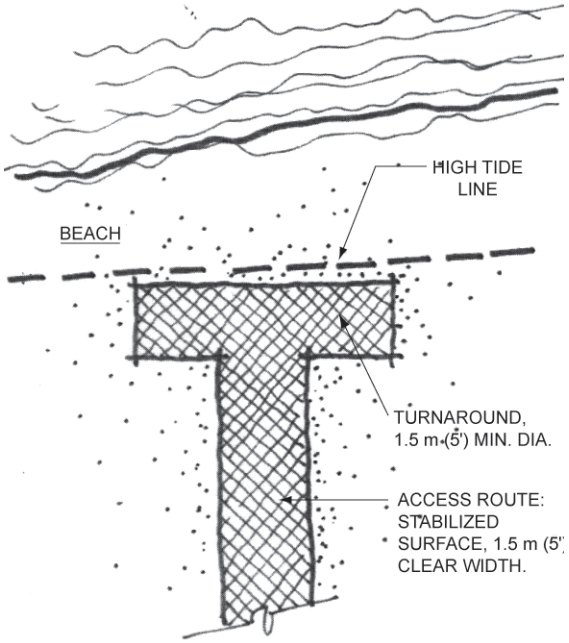


Figure 3-7. *Beach Access Route (Plastic Mat Option)*

- Maneuvering, resting, and viewing spaces would be provided at the high-tide level, normal recreation water level, or at the end of each beach access route. These spaces would be at least 1.5 m by 1.5 m (5 ft by 5 ft) and would not overlap with the route.
- Curbs, walls or edge protection at least 50 mm (2 in) high would be provided if the drop-off from the route to the beach is greater than 150 mm (6 in). If the drop-off is less than 150 mm (6 in), but greater than 25 mm (1 in), the route edge would be beveled.

Trail Features

The Trails Plan also includes overlooks, trailheads and trail signs as described below.

Overlooks

Overlooks allow park visitors to pause and enjoy a spectacular natural feature, observe wildlife, or take in a unique view of an impressive structure or building. Primary overlooks would be located along Presidio roadways. In some cases, an overlook might also function as a trailhead. Primary overlooks would include such facilities as:

- Automobile parking, including parking spaces reserved for persons with disabilities
- Interpretive signage
- Access to site elements
- Places to sit
- Other amenities, such as trash receptacles and bike parking

Secondary overlooks would be provided on trails without auto access. These secondary overlooks would be designed to take advantage of unique viewpoints resulting from trail alignment and topography. These "off the beaten track" overlooks are intended as quiet places of solitude.

Most overlooks would be accessible to persons with disabilities. This plan considers making improvements to existing overlooks and their viewing areas, and developing new accessible overlooks. If viewing areas are provided on designated overlooks, each viewing area would have at least one wheelchair maneuvering space with a firm and stable surface. The following specific requirements would apply:

- The maneuvering space would have a minimum dimension of 1.5 m (5 ft) diameter and typically 1:50 (2 percent) slope in any direction (in areas where a steeper slope is necessary to ensure proper drainage, a 1:33 or 3 percent slope would be permissible)
- Overlooks would provide at least one unrestricted viewing opportunity for each distinct point of interest at a height between 0.8 m (32 in) and 1.3 m (51 in)

A Presidio Overlook at Dusk

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Trailheads

Trailheads typically serve as multi-modal transfer points, allowing users to change from transit or auto to bicycle or foot, or from bicycle to foot. Trailheads would provide trail information and user amenities where appropriate. Trailheads would incorporate many, if not all, of the following elements:

- Convenient access to shuttle and/or transit stops
- Automobile parking, including parking spaces reserved for persons with disabilities
- Secure bicycle parking (racks or lockers)
- Wayfinding kiosks, with orientation and interpretive information
- Standard trail signs with information regarding trail conditions and degrees of difficulty
- Drinking water
- Trash receptacles
- Benches, or other places to sit
- Restrooms or directions to restrooms
- Scenic viewpoints or overlooks
- Places to sit
- Staging or gathering spaces

The plan includes two trailhead types, primary and secondary. Both types would be located where they would provide access to major trail starting points, to locations where major trails converge and to the starting points of accessible trails.

Primary trailheads include automobile parking and most of the elements listed above (Figure 3-8).

Secondary trailheads would provide a limited set of standard components, such as trail information and bicycle parking (Figure 3-9). These trailheads would not provide auto parking and would be most appropriate for changing the mode of travel from bicycle or public transit to foot.

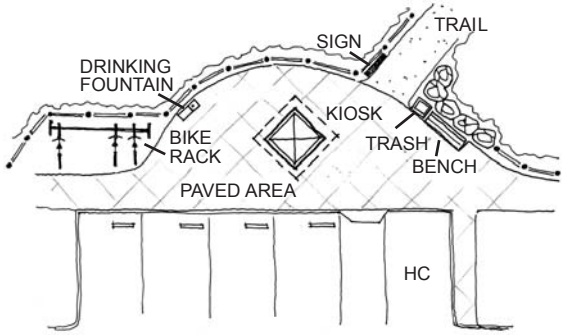


Figure 3-8. *Primary Trailhead*

Trail Signs

Several types of trail signs would be used to provide visitors with information about directions, trail conditions, and trail locations. Signage would comply with NPS and Trust sign guidelines. The Presidio is within the NHLD, and signs are subject to review under the NHPA. Signs would be designed and sited to avoid adversely affecting the features that contribute to the landmark status of the Presidio and to be compatible with, and sensitive to, the Presidio's historic character. An example of existing signage is shown in Figure 3-10.

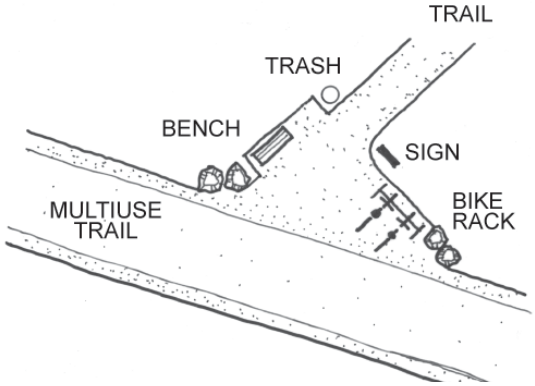


Figure 3-9. *Secondary Trailhead*

Figure 3-10. *Existing Trail Marker, Bay Area Ridge Trail*

Trailhead Signs. Trailhead signs would be located at the starting points of trails and at key intersections of major trail corridors. These would provide some or all of the following:

- Name of the trail
- Running and cross slope
- Clear tread width
- Trail surface characteristics
- Distance to points of interest
- Trail elevation change

Designated accessible trails would display the international symbol of accessibility. If the trail is not accessible, it would be signed "Not Accessible" at the trailhead.

Directional Signs. Directional signs would be located at key trail intersections and indicate the direction to major park destinations and trails.

Trail Markers. Trail markers similar to the Bay Area Ridge Trail marker, would identify each trail along its entire route. The post signs would include:

- Trail logo identifying the particular trail
- Trail symbol indicating permitted trail use(s)
- Direction indicator

Trail Guides

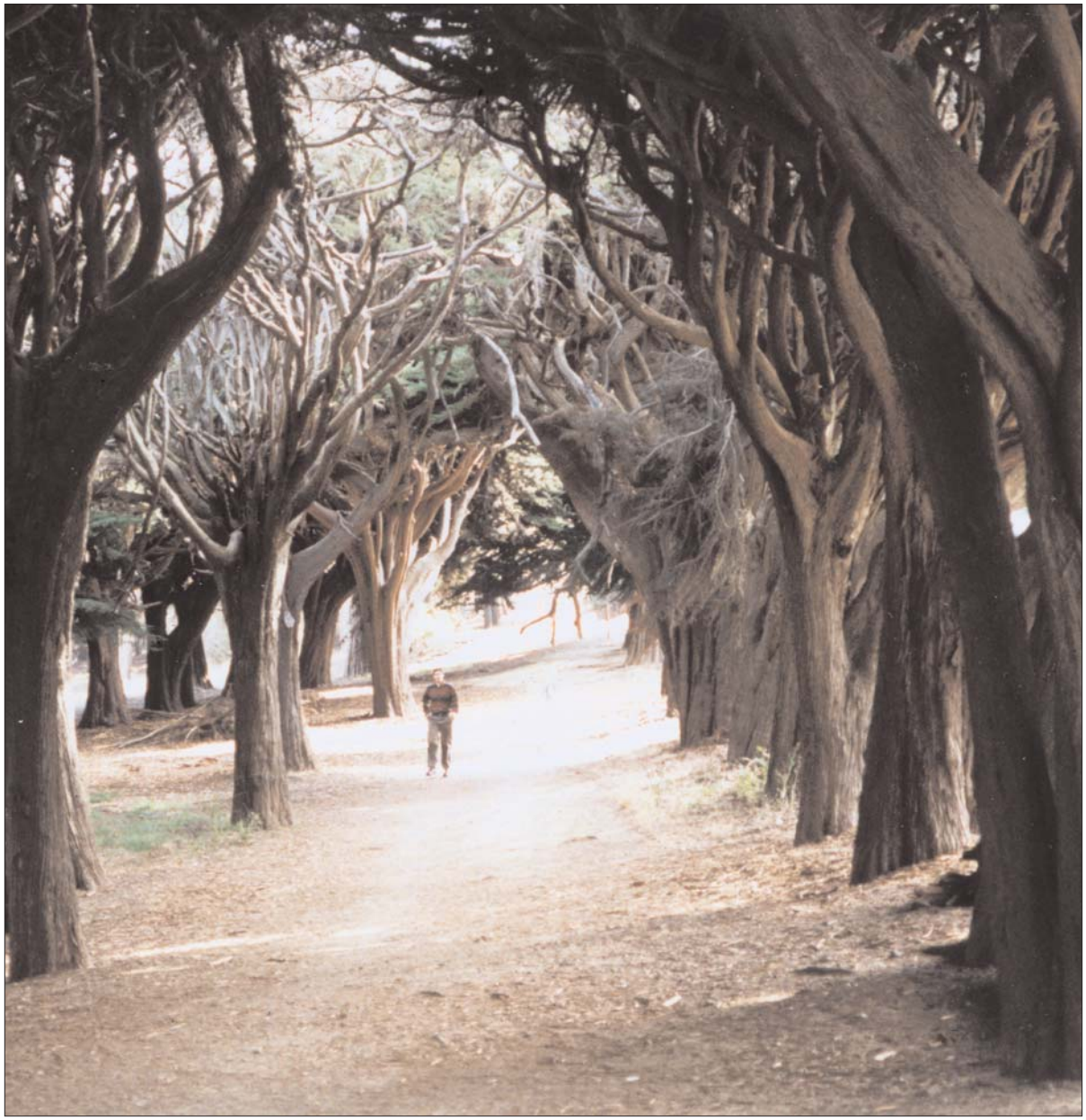
Several trail guides may be proposed for development in conjunction with park signage. Possible topics include a general Presidio trail guide; guides for historic loops such as the Main Post, the Batteries and Bluffs Trail, and Fort Scott; and children's guides, for trails such as the Ecology Trail.

Best Management Practices

Best Management Practices (BMPs) are trail design and construction techniques that promote resource conservation (see Appendix C). The techniques will be integrated into trail design to protect, restore and enhance the environment, increase trail safety and minimize user conflicts. BMPS can include schedules for activities, regulations, maintenance and design guidelines and other trails and bikeways management practices. The BMPs are intended to supplement, not replace, existing NPS/Trust trail management and maintenance practices. In the future, knowledge gained through operational experience and technological advances would help refine and improve the BMPs. The BMPs are divided into twelve general categories:

1) Drainage control
2) Trails in wet areas
3) Trails on steep cross slopes
4) Trails on flat grades
5) Eroding and hazardous trail edges
6) Trails on sandy soils
7) Trails damaged by vehicle use
8) Bicycle safety improvements
9) Social trail closures
10) Trails in proximity to sensitive resources
11) Air quality
12) Natural resource conservation measures

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment



4 Alternatives

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

This chapter describes the four trails and bikeways alternatives and summarizes the similarities and differences between the alternatives. Existing designated trail corridors are described, along with proposed changes and new trail corridors. In addition, the overall trails and bikeways network is described and illustrated.

ALTERNATIVE DESCRIPTIONS

Three action alternatives have been identified that would meet the project purpose and need, as well as the goals and objectives outlined in Chapter 2. In order to meet all of the goals and objectives within all of the alternatives, the action alternatives use similar strategies to improve the trail system. They differ primarily in the type of user experience they provide.

No Action Alternative

Alternative A is the No Action Alternative, which maintains the Presidio's current trails and bikeways network. It assumes that no comprehensive changes or major new trail building would take place within the timeframe of the Trails Plan (20 years).

The Action Alternatives

Alternatives B, C and D are the plan's action alternatives:

- Alternative B: Mixed Use (Preferred Alternative) – emphasizes the widest range of trail types and connections
- Alternative C: Shared Use – emphasizes multi-use trails to accommodate large numbers of different types of users
- Alternative D: Dispersed Use – emphasizes a wide variety of narrow, pedestrian-only trails

All of the action alternatives provide a wide range of differing experiences, from quiet solitude to an urban promenade experience. The action alternatives create strong connections between the entrances and major points of interest, and allow various opportunities for travel between these points.

Improved connections between residential areas, employment centers, and transit stops would help reduce the number of automobile trips within the Presidio, and provide safer and more convenient routes for residents, employees, neighbors and visitors. Primary trailheads located at high use areas provide automobile parking, but no parking areas would be provided at secondary trailhead locations.

The action alternatives increase opportunities for access to and interpretation of historic and cultural resources. For example, trail destinations include places such as El Polin Springs, Fort Scott, historic sites at the Main Post, and the Presidio Stables, which are all important to the Presidio's history. There would be better access to Fort Point from the Golden Gate Bridge Plaza, as well along the Golden Gate Promenade. Historic batteries along the coast, including Batteries Cranston, McKinnon-Stotsenberg, Godfrey, Crosby, and Chamberlin, would be connected by the trail system. A new trail alongside Battery McKinnon-Stotsenberg would increase opportunities for interpretation. An existing trail rerouted around Battery East would prevent further degradation of the historic earthworks there. Rehabilitation of Lovers Lane would reveal that portion of the Presidio's history.

In addition, the action alternatives would include the following:

- Trailhead locations coordinated with shuttle stops
- Multi-use paths for regional trails including the Bay Area Ridge Trail, De Anza Trail, the San Francisco Bay Trail, American Discovery Trail (a shared alignment) and the California Coastal Trail

- Pedestrian trails separated from the roads in many areas to provide opportunities for solitude
- A comprehensive network of on-street bikeways
- About half of the mapped 14+ km (9+ mi) of social trials designated as trails, and half restored to vegetated open land

All action alternatives propose about 48.2 km (30 mi) of newly designated trails; however the alternatives provide substantially different user experiences. The alternatives vary in the proposed amount of pedestrian-only trail versus multi-use trails, and how those trails are dispersed throughout the Presidio.

In the text and illustrations that follow, the alternatives are described in two ways: first by describing principal trail corridors, and second by describing the entire network of trails, divided into pedestrian, multi-use and bike trails. In some cases, trail corridors follow existing trails, such as the De Anza Trail or the Bay Area Ridge Trail. In other cases, the trail corridors are "new." New corridors may not require construction of new trails, but instead involve designation and improvement of existing, disconnected trails or social trails as a named, continuous corridor. Generally, new corridors would require some improvement of social trails to provide a consistent, connected experience. All alternatives use the same named trail corridors, and differ only in the treatment of the trails within those corridors. There are additional trails that connect the named corridors, and these also vary within each alternative.

Figure 4-1 identifies street names and locations for reference in the descriptions that follow.
Figure 4-2 is a consolidated map showing all the named trail corridors.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

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Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

CHANGES TO EXISTING TRAIL CORRIDORS

California Coastal Trail Corridor

The existing California Coastal Trail (Coastal Trail) will eventually traverse the entire Pacific coastline of California. The 4.8 km (3 mi) section through the Presidio travels along the coastal bluffs, which support some of the most intact natural habitat in the Presidio and provide expansive views of the Pacific coastline. The trail provides access to gun batteries that were built in the 1890s for coastal defense and abandoned after World War II. The batteries are scattered along the bluffs from the Golden Gate in the north to Battery Chamberlin at Baker Beach. Currently classified as a pedestrian trail and City Bike Route, the trail is accessed from the Golden Gate Bridge Plaza, Battery Godfrey parking area, and Baker Beach. No formal trailheads exist.

At its north end, the trail merges with the Bay Area Ridge Trail and the De Anza Trail as it approaches the Golden Gate Bridge. Widths vary from 0.9 m to 2.4 m (3 ft to 8 ft). The trail surface also varies from bare earth to gravel on portions that are used as maintenance roads.

The middle section of the trail is a narrow 0.6 m to 1.5 m wide (2 ft to 5 ft) dirt path immediately adjacent to Lincoln Boulevard. At the southern end near Baker Beach, the trail drops down to the ocean on an existing gravel maintenance road, connecting to Battery Chamberlin and the parking area. A parallel social trail exists immediately west of the guardrail on Lincoln Boulevard.

The Coastal Trail is also City Bike Route #95. This bike route enters the Presidio at the 25th Avenue Gate and travels along Lincoln Boulevard to Merchant Road and the Golden Gate Bridge, primarily as a Class III shared roadway.

Proposed Improvements

The action alternatives propose the following improvements where feasible, given topography and other factors:

- New trailheads at the bridge plaza, and at the 25th Avenue Gate
- A new multi-use trail on the west side of Lincoln Boulevard
- Bowman Road reconfigured as a new multi-use trail east of Batteries Cranston and Marcus Miller, connecting to the Golden Gate Bridge
- A new multi-use trail along Bowley Street
- A new multi-use loop trail at Battery Chamberlin and Baker Beach
- New bike lanes on both sides of Lincoln Boulevard (City Bike Route #95) from the Golden Gate Bridge to the 25th Avenue Gate
- A new direct bike route to the Golden Gate Bridge via a multi-use trail

Variations Between Alternatives

Alternative B provides:

- An improved pedestrian trail traversing the coastal bluffs
- A connection on an existing social trail from Lincoln Avenue up to the Washington overlook (which would remain until restoration of Baker Beach housing area begins)

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

- An improved connection at Story and Merchant Avenues
- A new pedestrian spur trail connecting from below Battery Marcus Miller to north Baker Beach (may be subject to additional U.S. Fish and Wildlife Service [USFWS] consultation)
- Redevelopment of the existing social trail west of Batteries Cranston and Miller as a pedestrian trail

Alternative C provides:

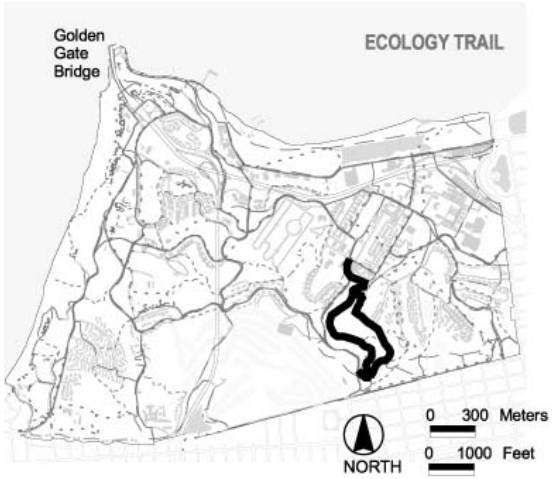
- Closure of the pedestrian trail to the west of the coastal batteries

Alternative D provides:

- A new pedestrian trail from the Golden Gate Bridge to the Lincoln Boulevard and Ralston Street intersection
- A pedestrian spur trail connecting from below Balbery Marcus Miller to North Baker Beach (may be subject ot additional USFWS consultation)
- Redevelopment of the existing social trail west of Batteries Cranston and Miller as a pedestrian trail

Ecology Trail Corridor

The existing Ecology Trail is a moderately steep 3.2 km (2 mi) hike that provides access to some of the less developed areas of the Presidio. The trail begins behind the Officers' Club at the Main Post



and travels through a forest of eucalyptus, cypress and redwoods to the overlook at Inspiration Point. From there, the trail loops past serpentine grassland supporting endangered plant communities to Quarry Road and back to the Main Post. A spur connects to El Polin Springs.

Informal social trail access is available at the north end from a hidden parking lot at Funston Avenue and Hardie Street. Informal social trail access also is available from Barnard Avenue near Pop Hicks Field. Access from the south is provided at Inspiration Point and at several points along West Pacific Avenue.

In its existing configuration, the upper section of the corridor is a packed-earth pedestrian trail ranging from 0.9 m to 3 m wide (3 ft to 10 ft). The lower section runs along the abandoned Quarry Road alignment. Inspiration Point and El Polin Springs are major destinations.

Bicycles are not permitted on the western portion of the Ecology Trail. With no trail controls, however, bicyclists currently use the trail.

Proposed Improvements

The action alternatives would relocate the Main Post trailhead to the intersection of Arguello Boulevard and Moraga Avenue and would improve wheelchair accessibility between Inspiration Point and Quarry Road.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Variations Between Alternatives

In addition to the changes proposed above, Alternatives B and C provide:

- An accessible connection to the south of the new trailhead at Inspiration Point
- A new multi-use trail from the Main Post trailhead to Barnard Avenue, Hicks Road, and Quarry Road
- Redevelopment of Quarry Road as a multi-use trail
- An accessible connection from Quarry Road to Arguello Boulevard

Alternative D provides:

- A partially accessible connection
- New pedestrian trails connecting to Arguello Boulevard behind the Officers' Club
- Reconfiguration of Quarry Road as a pedestrian trail

Bay Area Ridge Trail

A new 4-km long (2.5 mi) segment of the Bay Area Ridge Trail was opened in 1999. The trail enters the Presidio from the south at the Arguello Gate and accommodates both hikers and bicyclists. The trail connects with the De Anza Trail at Washington Boulevard and with the California Coastal Trail near the Golden Gate Bridge. Along with the Golden Gate Promenade, the trail's sections near the Arguello Boulevard/Washington Boulevard intersection and through Rob Hill provide the Presidio's only official off-street multi-use trails.

The Presidio Golf Course provides trailhead parking for southern access to the trail. The Battery East parking area provides access from the Golden Gate Bridge area.

In its current configuration, the off-street multi-use trail near Arguello and Washington Boulevards is surfaced with recycled paving materials and varies between 2.4 m and 3 m in width (8 ft to 10 ft). The Rob Hill section is on a gravel-surfaced service road and is 3.3 m to 7.5 m wide (11 ft to 25 ft). At Fort Scott, the multi-use trail divides into a shared service roadway for bicycles, and a wide, interior sidewalk for pedestrians. Another pedestrian section of the Bay Area Ridge Trail is located to the west of the coastal batteries.

The on-street portions of the Bay Area Ridge Trail are designated as City Bike Route #65. This bike route enters the Presidio at the Arguello Gate and converges with the California Coastal Trail at Lincoln Boulevard and Merchant Road.

Proposed Improvements

The action alternatives provide the following improvements where feasible, given topography and other constraints:

- Improvements to the Presidio Golf Course trailhead
- A new multi-use trailhead on the north side of Washington Boulevard

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

- Striped bike lanes on both sides of Arguello Boulevard and Washington Boulevard (City Bike Route #95)
- A shared roadway on Kobbe Avenue and Greenough Avenue, and on the Ralston service road

Variations Between Alternatives

In addition to the improvements listed above, Alternative B provides:

- Improvements to the multi-use route through the forest from Nauman Road near the cemetery to Rob Hill
- An alternate route for the Rob Hill alignment with a new multi-use trail south of Battery McKinnon-Stotsenberg and along Washington Boulevard
- Improvements to Rob Hill campground
- Improvements to the Rob Hill pedestrian trail, routing traffic around the campground
- Retention of the existing alignment through Fort Scott
- An improved Lincoln Boulevard crossing at Storey Avenue and connection to the California Coastal Trail at Merchant Avenue and Battery Boutelle
- An accessible multi-use path to Rob Hill campground from Central Magazine Road
- Future consideration of weekend closures to visitors' automobiles on Washington Boulevard from Arguello Avenue to Kobbe Avenue

Alternative C would provide:

- A new multi-use alternate route from Nauman Road near the San Francisco National Cemetery to Fort Scott
- Improvements to the Rob Hill alignment as a multi-use trail to the south of Battery McKinnon-Stotsenberg and along Washington Boulevard
- A new multi-use trail connecting to Greenough Avenue and Fort Scott and a multi-use loop trail in the interior of Fort Scott
- A re-route of the trail to an improved Lincoln/Merchant intersection with a new multi-use trail connection to the California Coastal Trail

Alternative D would provide:

- A realigned pedestrian trail to the south side of Washington Boulevard and upgrades to the existing roadside path to meet accessibility standards
- A new pedestrian trail south of Battery McKinnon-Stotsenberg
- Reconfiguration of the existing multi-use trail from Compton Road to Hunter Road and Rob Hill as a pedestrian trail

Juan Bautista de Anza National Historic Trail

The De Anza Trail was established in 1990 to commemorate the route followed by Juan Bautista de Anza in 1775-76, when he led a contingent of 30 soldiers and their families to found a presidio and mission at San Francisco Bay. In 1999, it was named a National Millennium Trail. The national trail starts in Nogales, Arizona, and travels northwest to the Presidio.

Although a formal trailhead has not yet been constructed, the existing trail can be accessed from the Mountain Lake and Coastal Batteries parking areas and from the Golden Gate Bridge.

About 4.8 km (3 mi) of trail from Mountain Lake to Fort Point have been marked. From Mountain Lake to Wedemeyer Street, the trail is a 4.8 m to 7.5 m wide (16 ft to 25 ft) asphalt paved service roadway. In the Battery Caulfield Road corridor, the trail occurs on sidewalks or in the roadway. At Washington Boulevard, it converges with the Bay Area Ridge Trail.

The Juan Bautista de Anza Trail is designated as City Bike Route #69. The bike route enters the Presidio at the 14th Avenue Gate and travels along Battery Caulfield Road, converging with the Bay Area Ridge Trail at Washington Boulevard.

Proposed Improvements

The action alternatives provide the following improvements where feasible, given topography and other constraints:

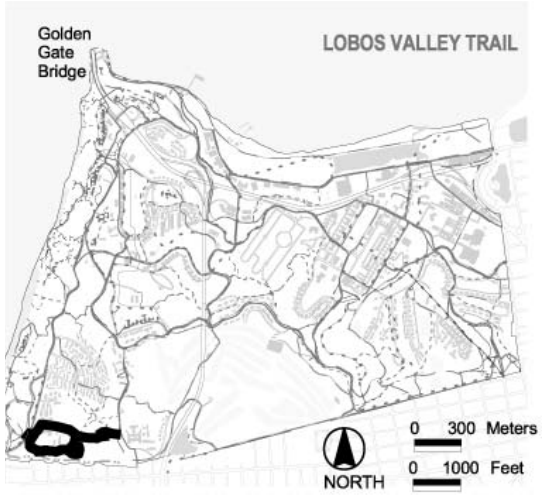
- A new trailhead with parking and an overlook constructed near the 15th Avenue Gate
- Reconfiguration of the Mountain Lake/Public Health Service Hospital service roadway and parking lot as a multi-use trail
- A connection to the Bay Area Ridge Trail at Washington Boulevard via a pedestrian trail/sidewalk along Wedemeyer Street and Battery Caulfield Road
- An uphill bike lane for bicycles along Battery Caulfield Road

Variations Between Alternatives

In addition to the improvements listed above, Alternative D provides:

- A new accessible pedestrian trail with an off-street alignment on Battery Caulfield Road
- A new pedestrian trail along the west side of Washington Boulevard

Lobos Creek Valley Trail Corridor



Containing one of the last free-flowing creeks in San Francisco, Lobos Creek Valley provides important native plant and wildlife habitat. It also provides a source of water for the Presidio. Just inside the 25th Avenue Gate, where Lincoln Boulevard crosses the valley, an 800 m (0.5 mi) long boardwalk winds around a parking lot and Trust maintenance facilities. The existing boardwalk passes through a recently restored dune habitat planted with native species. A sandy social trail at a slightly higher elevation leads to the 15th Avenue Gate and the De Anza Trail. The creek cannot be seen or accessed from the current alignment.

In its existing configuration, the trail consists of a 1.4 m wide (54 in) boardwalk, constructed of

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

recycled plastic lumber. It travels through restored dunes and native plantings in an alignment near Lobos Creek, which is protected by a high fence. The upper portion of the trail is between 1.5 m and 4.5 m wide (5 ft to 15 ft) and sand based. Social trails to the west of Lincoln Boulevard provide links to south Baker Beach. The trailhead for the lower trail is located near the 25th Avenue Gate. Bicycles are not permitted on any portion of the Lobos Creek Valley Trail.

Proposed Improvements

The action alternatives would provide the following improvements where feasible, given topography and other constraints:

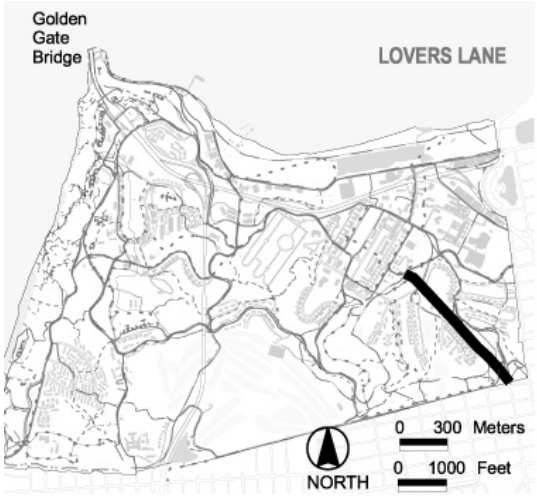
- A new trailhead at Baker Beach
- Relocation of the trailhead at the intersection of Lincoln Boulevard and Bowley Street
- A new creekside overlook on a gated spur for ranger-led tours
- Realignment of the trail in steep areas to provide greater accessibility
- Stabilization of the surface of the upper trail
- A new east-west route from the De Anza Trail to the California Coastal Trail through the Baker Beach Housing area

Variations Between Alternatives

In addition to the above improvements, Alternative D provides:

- Improvements to the existing social trail from upper Lobos Creek Valley Trail to the new pedestrian alignment of the De Anza Trail

Lovers Lane



Lovers Lane is one of the oldest foot trails in the Presidio. The existing trail begins at Funston Avenue and Presidio Boulevard. It crosses a brick footbridge over El Polin Creek. From there, it passes enlisted men's and officers' houses dating from the 1930s and ends at the Presidio Boulevard Gate. Historically, the path continued four miles southwest to Mission Dolores and connected the Spanish presidio to the mission.

In its current configuration, the trail consists of a shared roadway and sidewalk at Presidio Boulevard in the Main Post area and a 1.2 m to 1.8 m wide (4 ft to 6 ft) pedestrian trail connecting to MacArthur Drive. A 1.2 m to 2.4 m wide (4 ft to 8 ft) paved pedestrian trail then leads to the Presidio Gate.

Trailhead parking is provided near the intersection of West Pacific Avenue and Presidio Boulevard. The trail can also be accessed from the Main Post. Bicycles are not permitted on Lovers Lane. The trail is not accessible.

Proposed Improvements

The action alternatives would provide the following improvements, where feasible:

- A new pedestrian trailhead at the Main Post
- A new trailhead for a multi-use segment at the junction of Presidio Promenade near Lincoln and Presidio Boulevards
- A new pedestrian connection to the NPS Visitor Center
- Enhancements consistent with the historic character along the entire corridor
- An improved crossing at Pacific Avenue

- Improvements to the spur to the Broadway Gate
- Bike lanes on both sides of Presidio Boulevard, except for an uphill-only bike lane along Presidio Boulevard between Simonds Loop and Pacific Avenue

Variations between Alternatives

In addition to the improvements listed above, Alternative B provides:

- A multi-use trail along MacArthur Avenue, Morton Street and Clarke Street
- Reconfiguration of the existing social trail to the west of Presidio Boulevard as multi-use trail
- A multi-use trail along MacArthur Avenue, Morton Street, and Clarke Street

Alternative C provides:

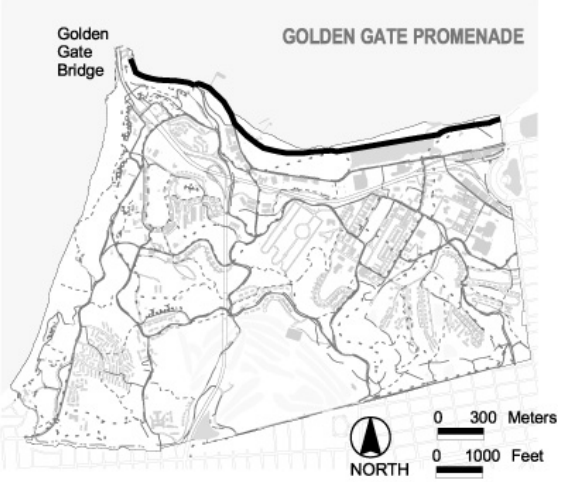
- A new multi-use trail to the east of Lovers Lane from MacArthur Avenue to Simonds Loop

Alternative D provides:

- No multi-use trails in the Lovers Lane corridor
- Reconfiguration of the existing social trail to the west of Presidio Boulevard as a pedestrian trail

Golden Gate Promenade

The existing Golden Gate Promenade provides access to Fort Port and the newly restored tidal marsh and beaches along Crissy Field. Trails are used both by pedestrians and bicyclists. The trails



offer expansive views and access to water birds, native plants and sandy beaches. The 6.4 km (4 mi) Golden Gate Promenade is part of the San Francisco Bay Trail – a planned recreational corridor that will provide a continuous 640 km (400 mi) network of bicycling and hiking trails around San Francisco and San Pablo Bays. The San Francisco Bay Trail will connect the shoreline of all nine Bay Area counties, and link 47 cities. To date, approximately 336 km (210 mi) of the alignment, or slightly more than half the San Franciso Bay Trail's ultimate length, have been completed. The Bay Trail will provide a commute alternative for bicyclists, as well as connections to numerous public transportation facilities, including ferry terminals, light-rail lines, bus stops, Caltrain, Amtrak, and BART.

In its current configuration, the multi-use trail, which begins at the Marina Gate, is 9 m wide (30 ft) with 6 m (20 ft) of paved trail and 3 m (10 ft) of unpaved trail. From Torpedo Wharf to Fort Point both cyclists and pedestrians share Marine Drive with automobiles.

City Bike Route #2 parallels the Golden Gate Promenade while it travels along Old Mason Street, Crissy Field Avenue, Long Avenue, and Marine Drive to Fort Point.

This corridor is the same for all action alternatives.

Proposed Improvements

The action alternatives provide the following improvements where feasible, given topography and other factors:

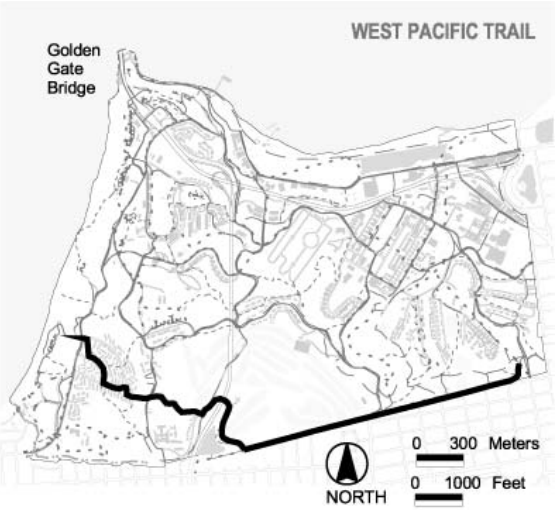
- New trailheads at the Golden Gate Bridge Plaza and Fort Point
- A marked pedestrian trail from Torpedo Wharf to Fort Point
- A Class III shared road for cyclists along Marine Drive (City Bike Route #2), with appropriate signage

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

- An uphill bike lane on Long Avenue
- A two-way Class I bike lane along the west bluff parking lot near the Warming Hut

West Pacific/Mountain Lake Corridor

West Pacific Avenue and Mountain Lake are



located at the southern edge of the Presidio. In 1776, Mountain Lake was the original campsite of the Anza settlement party. It later became a source of fresh water for San Francisco. Much of the lake's shoreline was buried in the 1930s to provide a freeway approach to the Golden Gate Bridge. An existing multi-use trail and bikeway along the western portion of West Pacific Avenue provides access to Mountain Lake from the Arguello Gate.

An off-street pedestrian trail along the eastern portion of West Pacific Avenue currently provides a link from the Arguello Gate to the Presidio Gate as it passes by Julius Kahn Playground, Lovers Lane and portions of the Presidio Forest, a mature forest of pine, cypress and eucalyptus, planted by the army from the 1880s through the 1940s.

In its current configuration, the trail consists of a 1.5 m to 4.5 m wide (5 ft to 15 ft) trail along West Pacific Avenue from Presidio Boulevard to Arguello Boulevard. The unmarked trail passes through the Presidio Golf Course parking lot and along a service road to Mountain Lake and the former Public Health Service Hospital. The upper Lobos Creek Valley Trail and adjacent social trails provide connecting links to the De Anza Trail, Baker Beach Housing and the California Coastal Trail.

Bicycles currently share the roadway with cars along West Pacific Avenue from the Presidio Gate to 5th Avenue. Both bicyclists and pedestrians share the service road to Mountain Lake.

Proposed Improvements

The action alternatives provide the following improvments where feasible, given topography and other constraints:

- Improvements to the existing pedestrian trail along West Pacific Boulevard from Presidio Boulevard to Arguello Boulevard
- Reconfiguration of the Presidio Golf Course parking lot to provide a continuous multi-use trail from Arguello Boulevard to Mountain Lake
- A new multi-use trail from the Lobos Creek trailhead to the Baker Beach picnic area
- Class III shared bikeway and traffic calming measures on West Pacific Boulevard

Variations Between Alternatives

In addition to the improvements described above, Alternative B provides:

- A new multi-use trail between the Ecology Trail and Lovers Lane, reconfiguring existing social trails
- Upgrades to the social trail on the north side of the Public Health Service Hospital to a secondary pedestrian trail with connections to the De Anza Trail

Alternative C provides:

- Upgrades to the existing pedestrian trail along West Pacific Boulevard to a multi-use trail between Presidio Boulevard and Arguello Boulevard
- A new multi-use trail between the Ecology Trail and Lovers Lane. The segment from the Ecology Trail to Paul Goode Field would be new construction, while the segment from Paul Good Field to Lovers Lane would reconfigure the existing service road and the social trail
- Upgrades to the social trail on the north side of the Public Health Service Hospital to a multi-use trail with connections to the Anza Trail
- A new multi-use trail from the De Anza Trail to Lincoln Boulevard and a new multi-use trail connecting to the Upper Lobos Creek Valley trail

Alternative D provides:

- Reconfiguration of an existing service road and social trails to a pedestrian trail connecting Lovers Lane to Paul Goode Field and the Ecology Trail, via the Pacific Grove
- An additional pedestrian trail connection to the upper portion of the Lobos Creek Valley Trail and with the De Anza Trail on upper Battery Caulfield Road
- Upgrades to the social trail on the north side of the Public Health Service Hospital to a secondary pedestrian trail with connections to the De Anza Trail

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

NEW TRAIL CORRIDORS

Presidio Promenade

The new Presidio Promenade corridor would follow Lincoln Boulevard, which links many of the cultural and historic resources of the Presidio. This includes the Golden Gate Bridge at the northwest reaches of the park, Fort Scott, the Cavalry Stables, the San Francisco National Cemetery, the Main Post and the NPS Visitor Center. Presidio Boulevard, Letterman Avenue and Lombard Street would also be included in the corridor, and would connect the Main Post to the Lombard Gate and the Letterman Complex at the park's eastern edge. The accessible route and the bicycle route of the San Francisco Bay Trail shares the alignment with the Presidio Promenade from Long Avenue to the Golden Gate Bridge.

With such rich historical resources, the new Presidio Promenade would become a primary route for visitors, residents and tenants. It would provide multi-use and pedestrian trail segments and a bikeway from the Golden Gate Bridge to a new gate at Greenwich Street, designed to accommodate pedestrians and bicycles only. Visitors arriving by foot, bicycle, public transportation, or automobile from either the north or the east would have easy access to most other major Presidio trail corridors.

Trailheads would be provided at Golden Gate Bridge Plaza, the NPS Visitor Center and inside the Lombard and Greenwich Gates.

Proposed Improvements

The action alternatives provide:

- New trailheads at Golden Gate Bridge Plaza, Battery East, the NPS Visitor Center and inside the Lombard and Greenwich Gates
- A multi-use "shortcut" south of the stables that connects to Lincoln Boulevard, with the Patten Road segment reconfigured as a multi-use trail, providing a west-bound bike route as a companion to the east-bound bike lane on Lincoln Avenue
- A new pedestrian trail on Lincoln Boulevard west of McDowell Street
- A new multi-use trail from Sheridan Avenue to Crissy Field Avenue to be constructed in conjunction with Doyle Drive
- Closing Crissy Field Avenue from Lincoln Boulevard down to the Mason Street Intersection to provide a multi-use trail (subject to separate review and approval)
- A connection from the trailhead at Greenwich Gate, with a multi-use trail between Lincoln Boulevard and Letterman Drive

Variations Between Alternatives

In addition to the improvements listed above, Alternatives B and C provide:

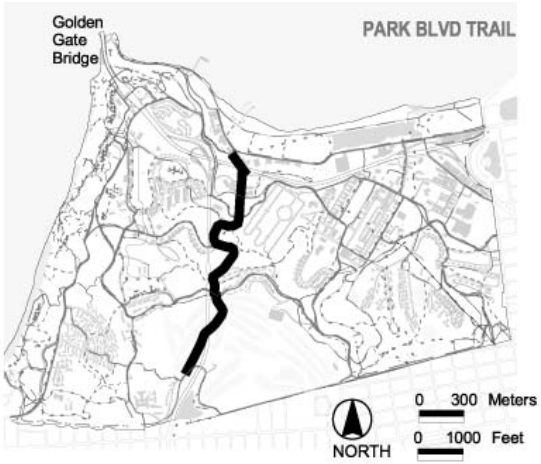
- A new multi-use trail from Fort Point overlook to the Golden Gate Bridge Visitor Center along the existing maintenance road
- A multi-use trail on Battery East Road from the Golden Gate Bridge Visitor Center to Battery East, continuing on the north side of Lincoln Boulevard
- A new multi-use trail on the northeast side of Montgomery Street, connecting to the Main Post and the NPS Visitors Center

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Alternative D provides:

- A connection from Fort Point overlook to the Golden Gate Bridge Plaza, with a new pedestrian trail along the existing road
- An alternative pedestrian route between Battery East and the Long/Lincoln intersection on Andrews Road
- A new pedestrian trail along Sheridan Avenue, connecting with the Main Post and the NPS Visitor Center
- A connection from the NPS Visitor Center to Lincoln Boulevard, with pedestrian trails as part of the Main Post rehabilitation

Park Boulevard Trail



The new Park Boulevard corridor follows Park Boulevard, which is a major north-south connector. The corridor travels through significant portions of the Presidio Forest – a mature forest of pine, cypress and eucalyptus, planted by the army from the 1880s through the 1940s. The new multi-use trail would connect Mountain Lake with Presidio and Golden Gate Promenades.

Proposed Improvements

The action alternatives provide:

- Improvements to the existing Mountain Lake trailhead
- Bike lanes on both sides of Park Boulevard between Washington and Lincoln Boulevards
- Bike lanes on both sides of McDowell Avenue

Variations Between Alternatives

In addition to the above improvements, Alternative B provides:

- A new sidewalk on the left side of MacDowell Avenue
- Improvements to the connection from the Presidio Golf Course intersection at Washington Boulevard and Park Avenue

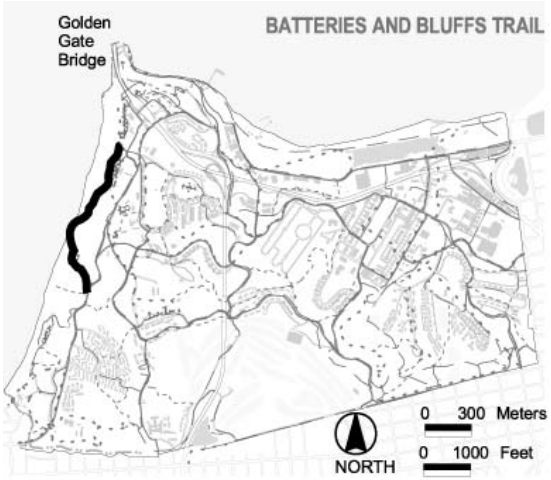
Alternatives B and C would provide:

- A new multi-use trail from Crissy Field to Mountain Lake

Alternative D provides:

- A new pedestrian trail from Crissy Field to Washington Boulevard, connecting to the multi-use trail at Mountain Lake

Batteries and Bluffs Corridor



The new Batteries and Bluffs Corridor provides a pedestrian trail from Battery Boutelle to Battery Crosby and Baker Beach, replacing the many social trails that now contribute to the degradation of the area.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Proposed Improvements

The action alternatives provide:

- A new trailhead with parking at Battery Godfrey
- A new pedestrian trail upgraded from the social trail from North Baker Beach to Battery Godfrey trailhead

Variations Between Alternatives

In addition to the above improvements, Alternative B provides:

- A new, challenging pedestrian trail from Battery Crosby to North Baker Beach

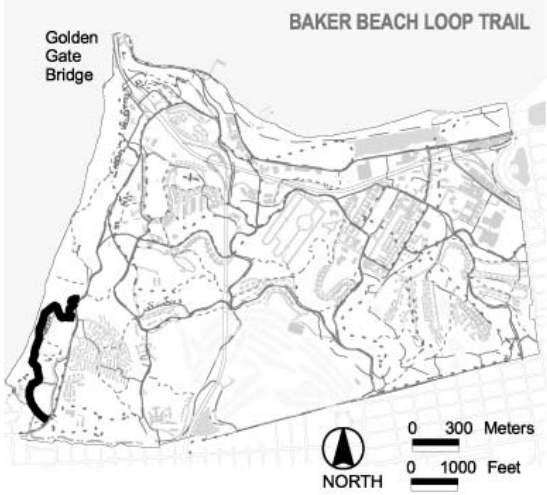
Alternative C provides:

- No pedestrian trail from Battery Crosby to North Baker Beach (subject to separate review and approval)

Alternative D provides:

- No pedestrian trail from Battery Crosby to North Baker Beach
- A new pedestrian trail on Battery Crosby service road
- A new pedestrian trail from Battery Marcus Miller to North Baker Beach

Baker Beach Corridor



The new Baker Beach Corridor accesses South Baker Beach and provides an alternative route to the California Coastal Trail on Lincoln Boulevard. The 1.6 km (1 mi) beach offers views of the Golden Gate Bridge, Marin Headlands and Land's End. A multi-use trail would provide an accessible route from the California Coastal Trail and the 25th Avenue Gate for visitors who wish to sightsee, fish, beachcomb, picnic or visit a coastal battery. Pedestrian trail connections to the Lobos Creek Valley Trails would also be available on this corridor. A trailhead would be located at the Baker Beach picnic area.

Proposed Improvements

The action alternatives provide:

- A new trailhead at the South Baker Beach picnic area to serve multiple trails via Baker Beach
- A new multi-use trail to connect Lobos Creek trailhead to Baker Beach and the Coastal Trail just north of Pershing Drive
- A beach access route from the beach parking lot to the high tide line
- A new accessible pedestrian loop trail encircling the picnic area

Variations Between Alternatives

In addition to the above improvements, Alternatives B and C provide:

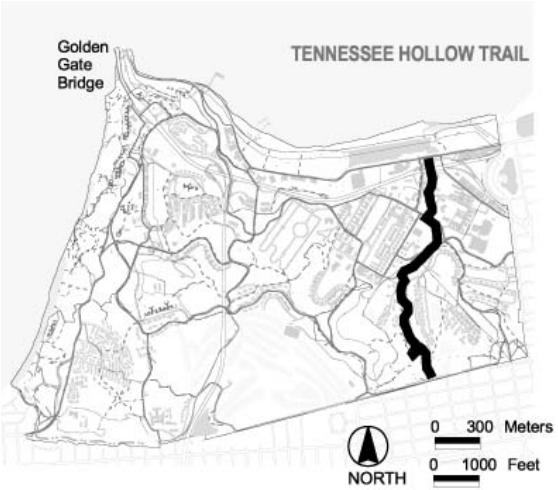
- A new multi-use trail on the west side to the parking area and Battery Chamberlin

Alternative D provides:

- A new pedestrian trail on the west side of the parking area and Battery Chamberlin

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Tennessee Hollow Corridor



The new Tennessee Hollow Corridor connects recreational areas at the south side of the Presidio (e.g., Julius Kahn Playground) through the Tennessee Hollow watershed to the restored Crissy Marsh. El Polin Spring, the source of fresh water for the Spanish Presidio, lies at the head of Tennessee Hollow. In 1898, the First Tennessee Volunteer Infantry Regiment camped there, and today visitors often picnic in this place of quiet retreat. The NPS and the Trust propose to restore the historic watershed from El Polin Spring to Crissy Field Marsh. A new trail would follow one of the three tributaries to the point where they converge above the Lovers Lane footbridge, continuing from there to Crissy Marsh. Trailheads would be provided at Julius Kahn playground, Lincoln Boulevard/Girard Road, and Mason Street.

Proposed Improvements

The action alternatives provide:

- Trailheads at Julius Kahn Playground, Lincoln Boulevard near Funston Avenue, Halleck Street at Mason Street, and Crissy Field Beach
- A new trail corridor developed in coordination with Tennessee Hollow restoration plans
- A connection to the Golden Gate Promenade and Crissy Field Beach trailhead via the existing pedestrian trail
- Spur trails with overlooks to view wetland and riparian environments
- Upgrades to Halleck Street to include bike lanes on both sides of the street, if feasible

Variations Between Alternatives

In addition to the above improvements, Alternative B provides:

- A new pedestrian trail east of Halleck Street from Lincoln Boulevard to the Mason Street bikeway and path

Alternatives B and C provide:

- A new pedestrian trail from Julius Kahn Playground to Presidio Boulevard, connecting via a multi-use trail to Funston trailhead at Lincoln Boulevard

Alternative C provides:

- A new multi-use trail east of Halleck Street from Lincoln Boulevard to the Mason Street bikeway and path

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

OVERALL TRAIL NETWORK

In addition to improving and increasing corridors within the Presidio, each action alternative would improve overall connectivity by providing an integrated trail network. Table 4.1 quantifies of the differences between the alternatives.

Alternative A: No Action

The No Action Alternative would maintain the Presidio's current trails and bikeways network. No new trails or bikeways would be constructed, but existing facilities would be maintained. The alternative is illustrated in Figure 4-3A. Figure 4-3B illustrates the existing road-based bicycle routes in the Presidio.

In this alternative:

- No comprehensive changes or major new trail building activities would take place
- No new multi-use trails or off-street bicycling opportunities would be provided
- Park facilities and operations would continue using current procedures

	ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C		ALTERNATIVE D	
	(km)	(mi)	(km)	(mi)	(km)	(mi)	(km)	(mi)
Trail Type								
Pedestrian Trails	16.5	10.2	33.1	20.7	16.9	10.5	44.5	27.6
Multi-Use Trails	9.8	6.1	30.1	18.8	42.1	26.1	17.6	10.9
Bikeways (Class II bike lanes)	3.7	2.3	22.4	14	23.2	14.4	20.8	12.9
Social Trails (not included in total)**	(15.9)**	(9.9)**	0	0	0	0	0	0
Total	30.0	18.6	85.6	53.5	82.2	51.0	82.9	51.4
Trails Modification								
New Trails	n/a	n/a	21.4	13.4	20.3	12.7	24.8	15.5
Pedestrian Converted to Multi-use Trail	n/a	n/a	4.8	3.0	57.7	4.8	3.4	2.1
Multi-use Converted to Pedestrian Trail	n/a	n/a	0.5	0.3	0.0	0.0	0.5	0.3
Social Trails Converted to Pedestrian Trails	n/a	n/a	5.8	3.6	2.1	1.3	2.0	1.2
Social Trails Converted to Multi-use Trails	n/a	n/a	3.0	1.9	4.4	2.7	0.5	0.3
Service Roads Converted to Multi-use Trails	n/a	n/a	0.8	0.5	0.9	0.5	0.9	0.5
Total Newly Designated Trails	n/a	n/a	36.3	22.7	85.4	22.0	32.1	19.9

***Note: All Action Alternatives will close some social trails and/or convert them to pedestrian or multi-use trails.*

Table 4-1. *Trails and Bikeways by Alternative*

- Limited closure of certain social trails might occur as part of ongoing maintenance operations to implement the VMP

Alternative A's overall concept is to maintain the status quo and to preserve the basic framework of existing vehicular, pedestrian, and bicycle use. In emphasizing the traditional uses of the Presidio, Alternative A would maintain the 16.5 km (10.2 mi) of existing pedestrian trails, 9.8 km (6.1 mi) of multi-use trails, and 3.7 km (2.3 mi) of bikeways. A minimum of 15.9 km (9.9 mi) of social trails would remain substantially unchanged, but would be subject to incremental closures over time as directed by the VMP.

Alternative B: Mixed Use

The Mixed Use Alternative features a mix of urban and natural visitor experiences to emphasize both traditional uses of the Presidio and the Presidio's unique location in a large metropolitan area. It would provide the widest range of trail types and connections. The alternative is illustrated in Figure 4-4A. Road-based bicycle routes provided in both Alternatives B and C are shown in Figure 4-4B.

In this alternative:

- Many opportunities would be provided for safe and enjoyable trails and bikeways experiences for the widest variety of park users
- New pedestrian and multi-use trails would provide access for people with disabilities to many Presidio destinations
- Off-street bicycling routes on many multi-use trails would be provided for family and recreational bicyclists
- Social trails that may be hazardous or threaten resources would be closed, consistent with the VMP. The social trails would be replaced with more sustainable trails providing access to the same park destinations

Alternative B provides:

- 85.6 km (53.5 mi) of total designated trails
- 33.1 km (20.7 mi) of primary and secondary pedestrian trails
- 30.1 km (18.8 mi) of multi-use trails
- 22.4 km (14.0 mi) of bikeways
- A minimum of 7.1 km (4.4 mi) of social trails would be closed and 8.8 km (5.4 mi) would be improved and designated as official trails

Alternative C: Shared Use

The Shared Use Alternative provides the most multi-use trails that access major points of interest in the Presidio. The alternative emphasizes the wider, multi-use trails that would accommodate large numbers of different types of users. The alternative would provide the fewest opportunities for dispersed visitor experiences, such as enjoying quiet solitude. The alternative is illustrated in Figure 4-5. Road-based bicycle routes provided in both Alternatives B and C are shown in Figure 4-4B.

In this alternative:

- The largest number of off-street bicycling opportunities would be provided for family and recreational bicyclists on shared, multi-use paths
- The fewest pedestrian-only trails would be provided

Alternative C provides:

- 82.2 km (51 mi) of total trails
- 16.9 km (10.5 mi) of total designated trails
- 42.1 km (26.1 mi) of multi-use trails
- 23.2 km (14.4 mi) of bikeways
- A minimum of 9.4 km (5.9 mi) of social trails would be closed and 6.5 km (4.0 mi) would be improved and designated.

Alternative D: Dispersed Use

The Dispersed Use Alternative emphasizes separating of pedestrians and bicycles. It offers significant opportunities for pedestrians only to experience natural and cultural resources in an atmosphere of quiet solitude. The alternative's key concept is to provide an individual experience of the Presidio and to permit more opportunities for solitude. It emphasizes narrower pedestrian linkages and connections. Alternative D would preserve the Presidio's established trail corridors. It would provide limited accessible trails and the least amount of off-street recreational bicycle opportunities. The alternative is illustrated in Figure 4-6A. Figure 4-6B shows road-based bicycle routes provided in this alternative.

In this alternative:

- The most pedestrian trails would be developed to provide the greatest degree of physical challenge for pedestrians, the greatest variety of pedestrian experiences, and the greatest opportunity for pedestrian travel throughout the Presidio
- Many opportunities would be provided for safe and enjoyable trails and bikeways along such major corridors as the California Coastal Trail and the Presidio Promenade
- A limited number of multi-use trails would be provided (about half the number of miles of multi-use trails as compared to other action alternatives)

In general, trail connections would not be as consistent and continuous as the other action alternatives, such as along the De Anza Trail and the Bay Area Ridge Trail corridors.

Alternative D would provide:

- 82.9 km (51.4 mi) of total trails
- 44.5 km (27.6 mi) of pedestrian trails
- 17.6 km (10.9 mi) of multi-use trails
- 20.8 km (12.9 mi) of marked bike lanes (Class II)
- A minimum of 13.4 km (8.4 mi) of social trails would be closed and 2.5 km (1.5 mi) would be improved as designated trails

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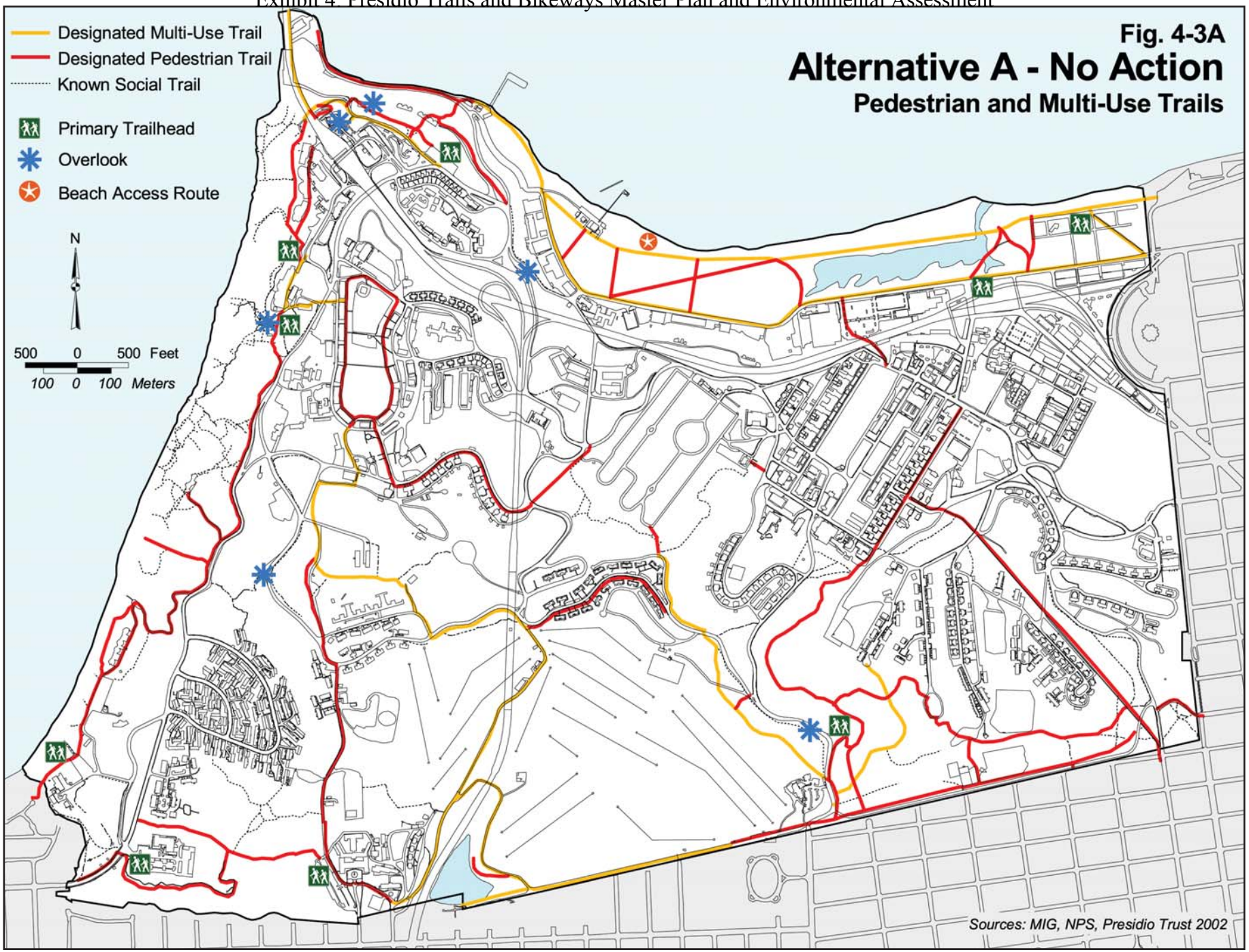

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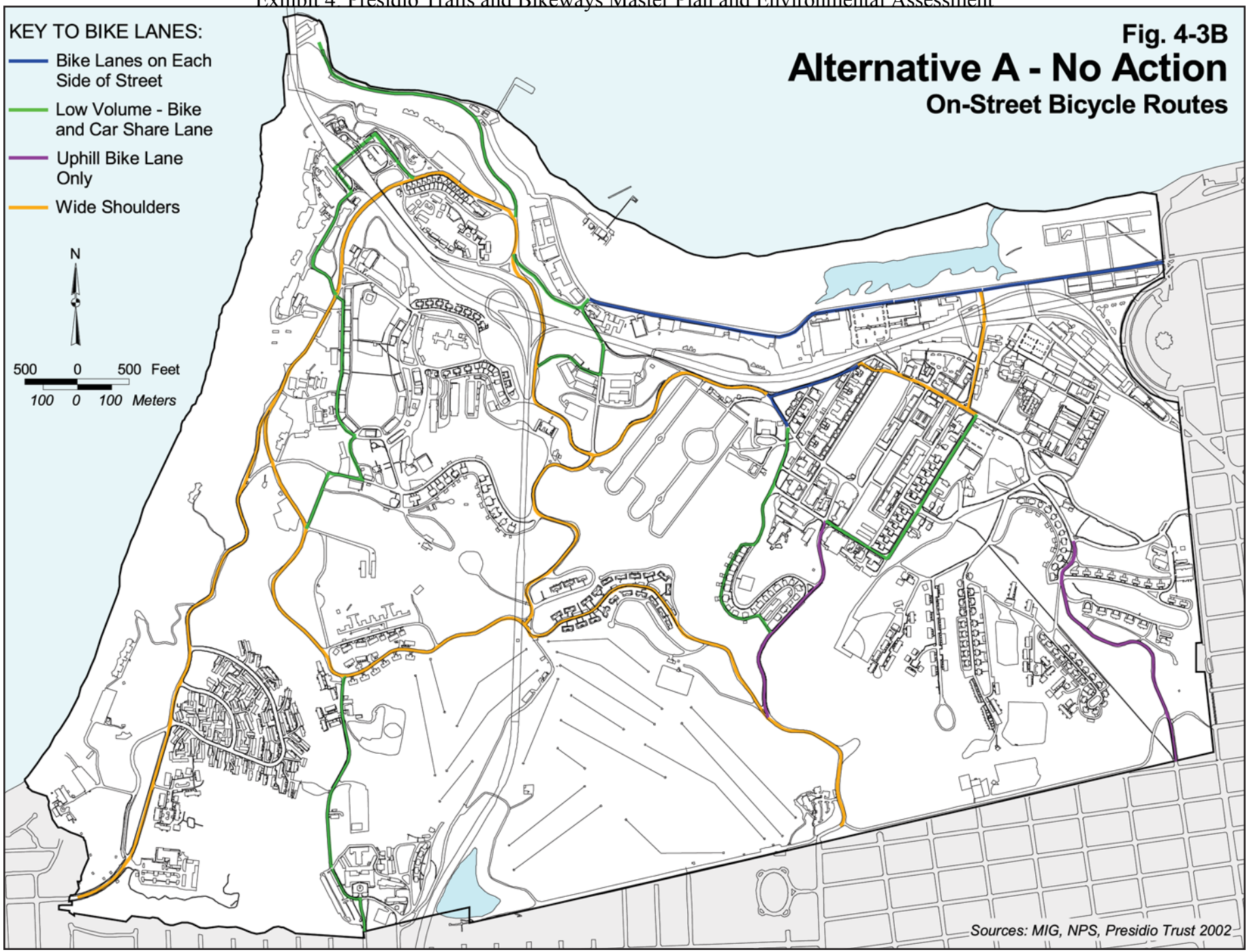

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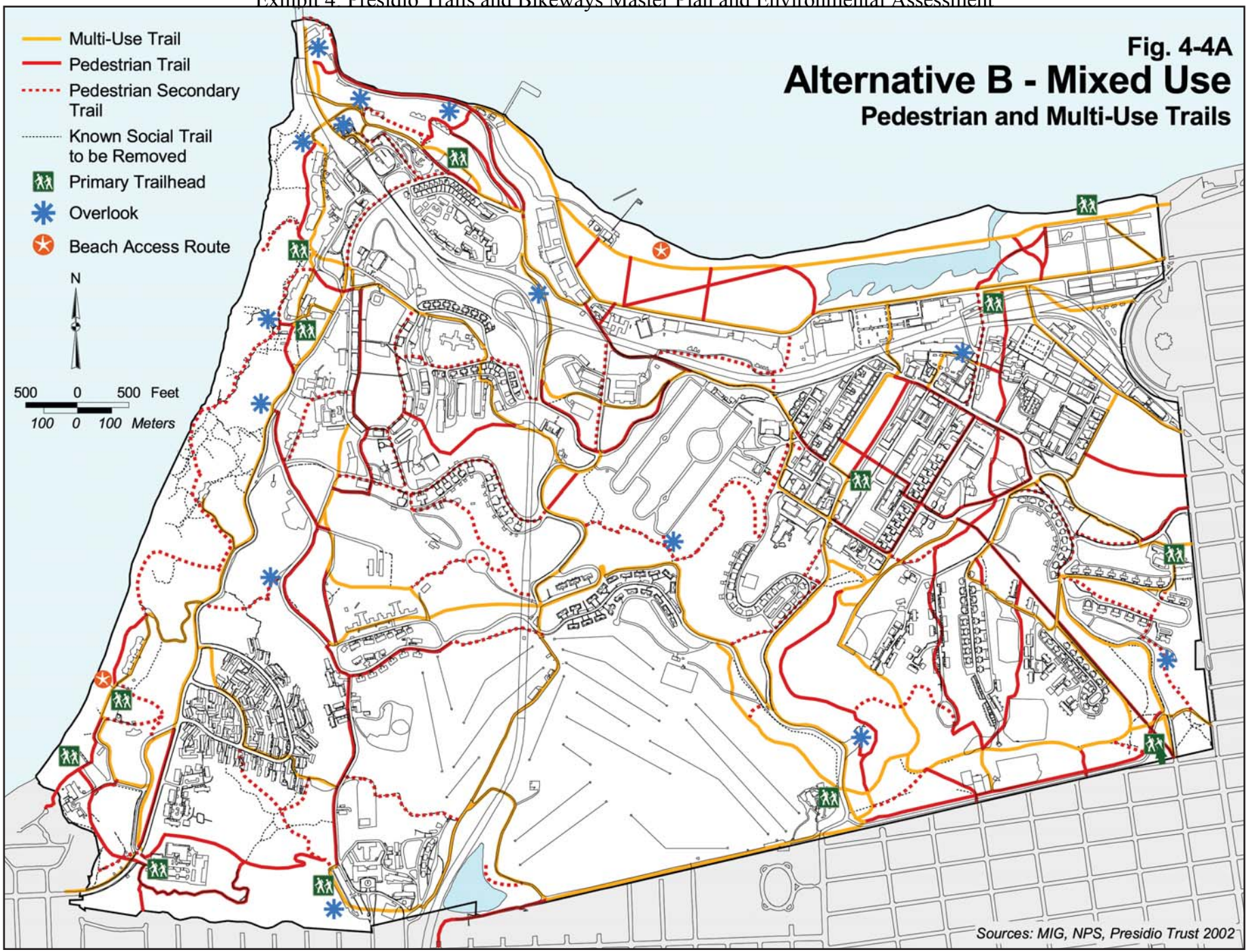

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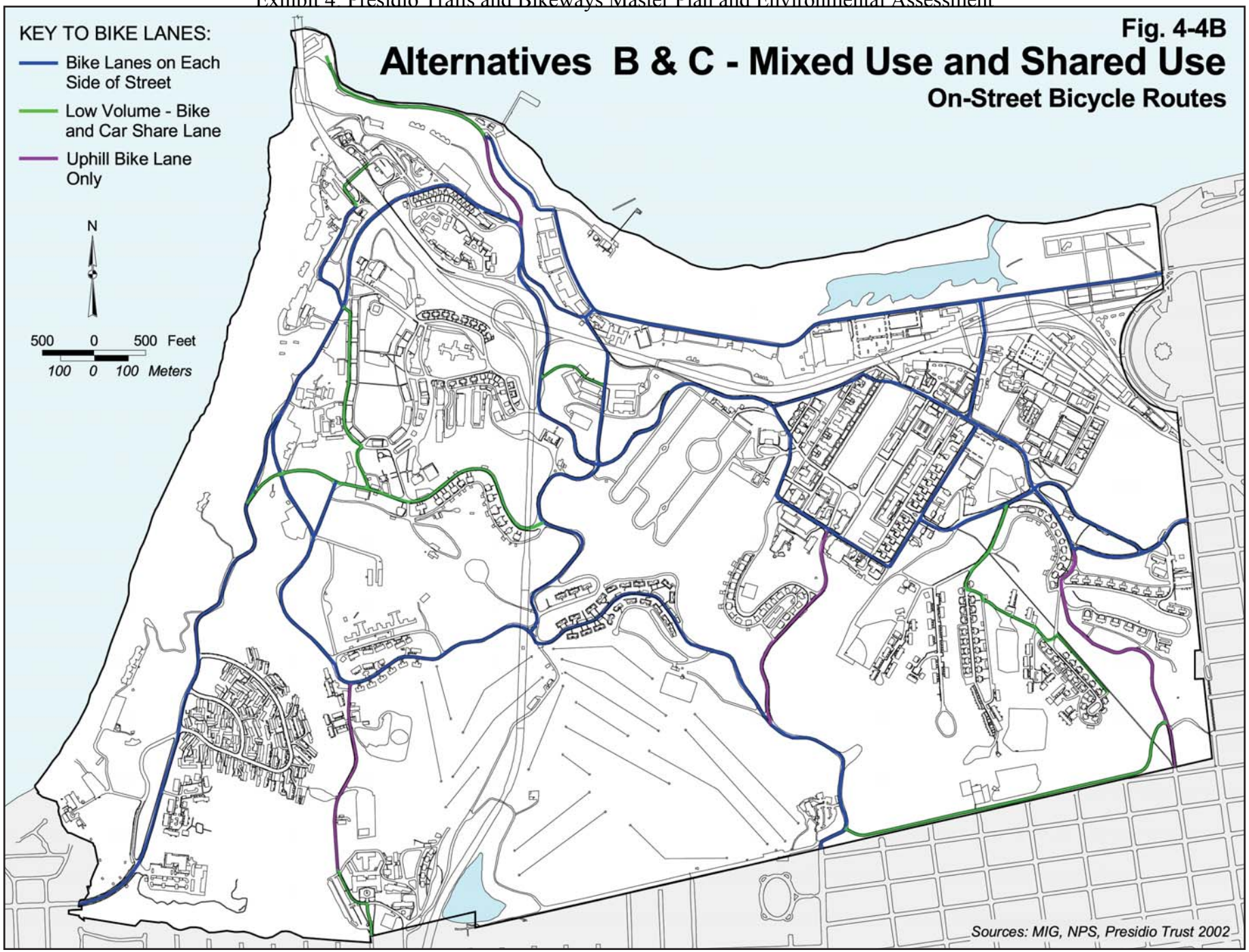

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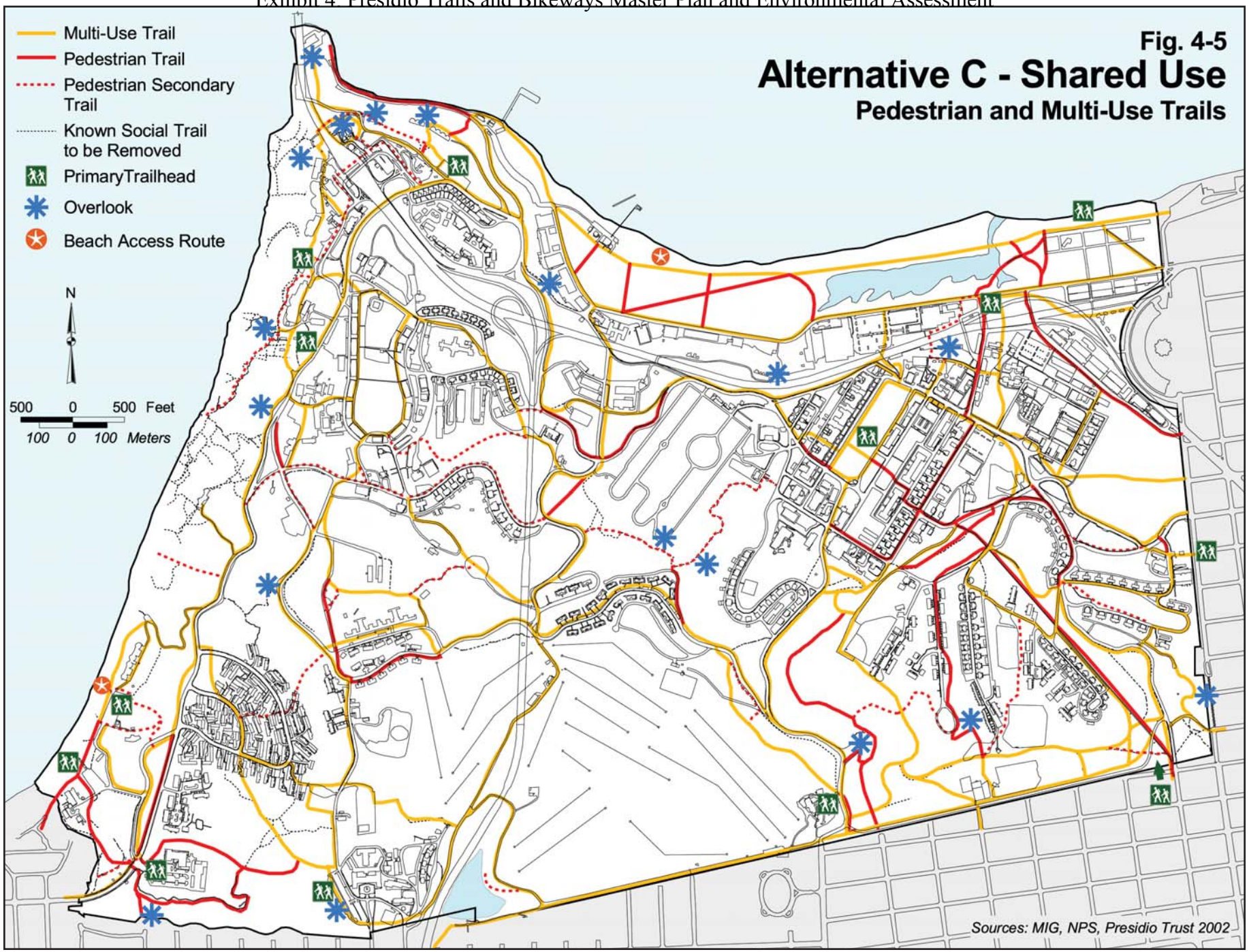

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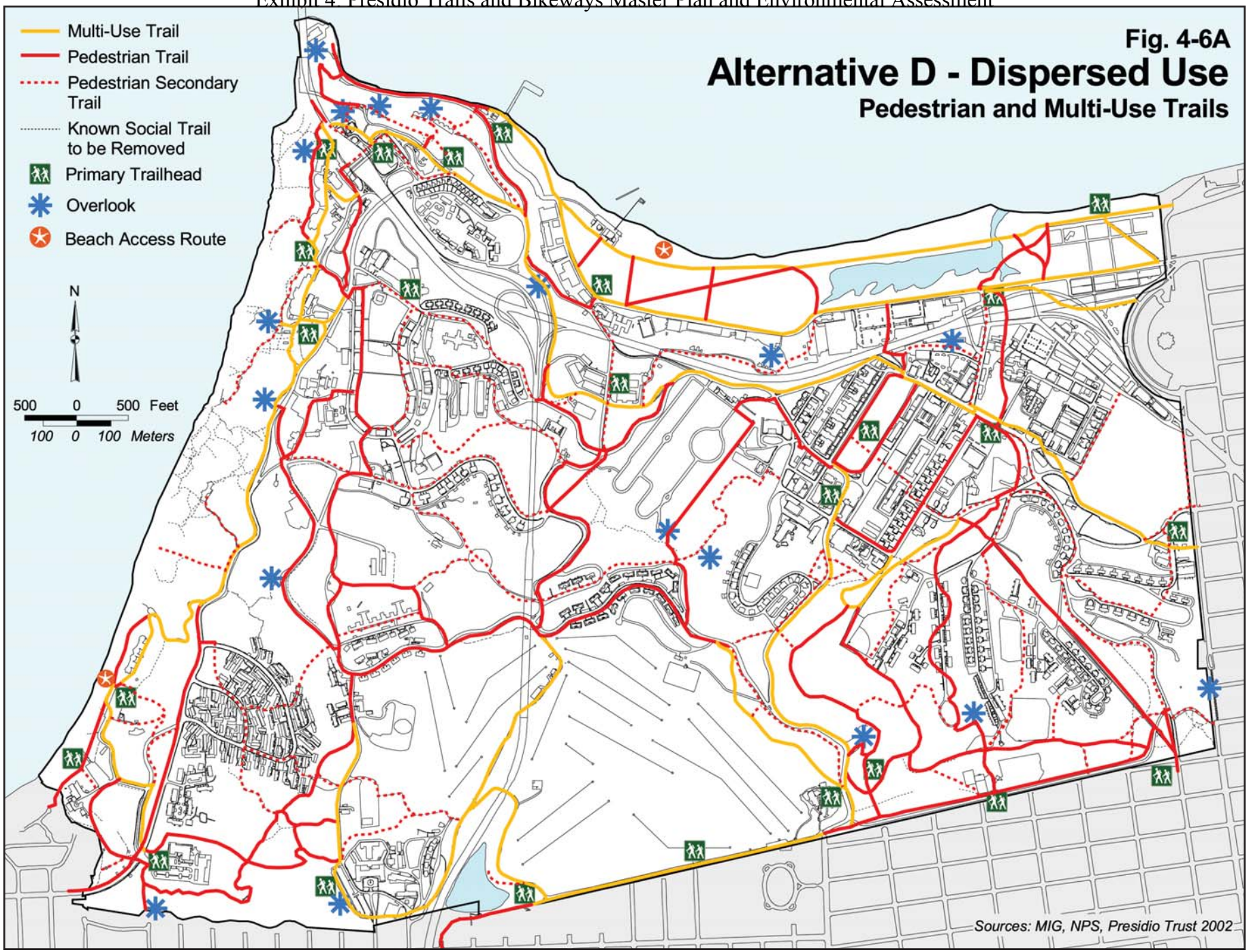

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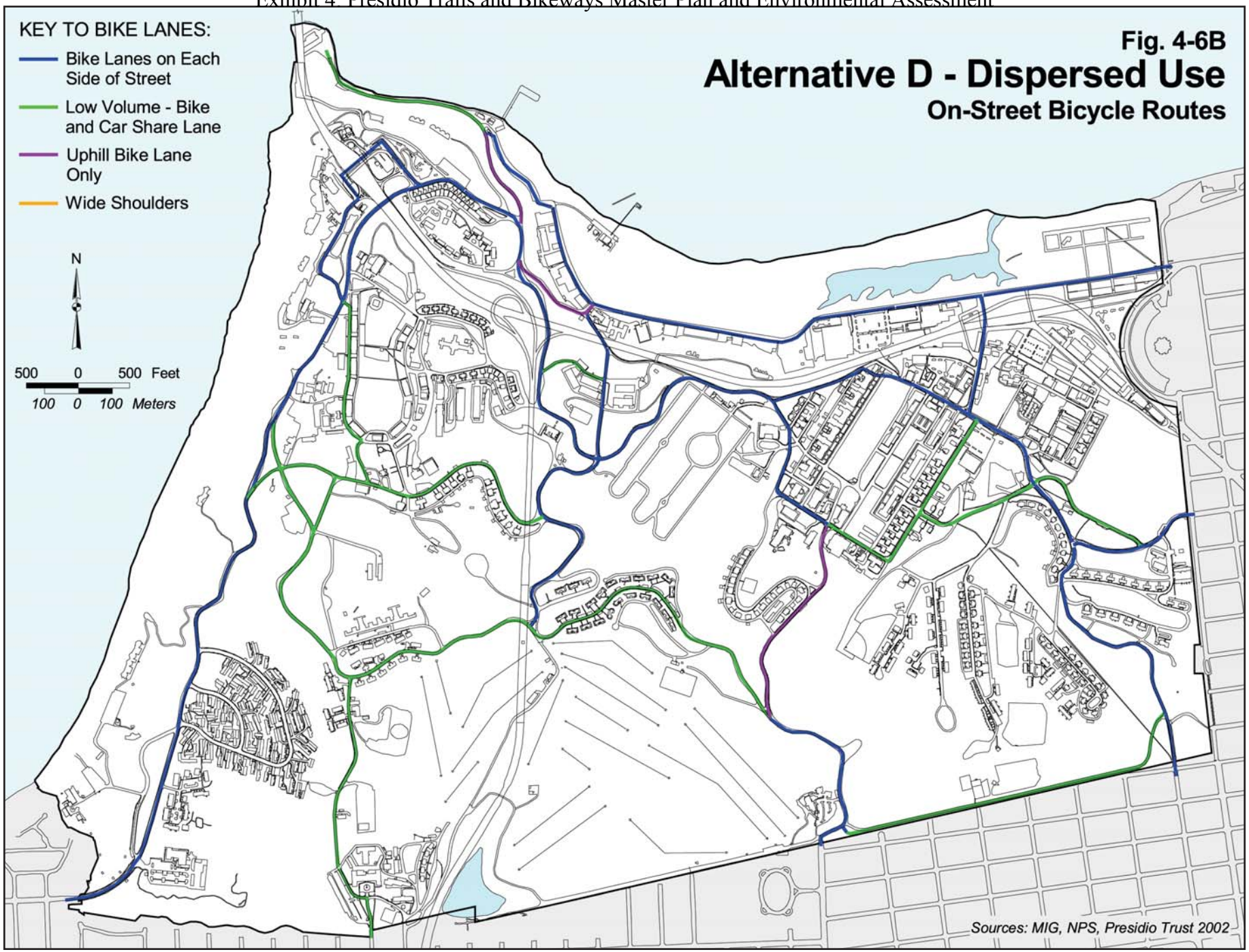

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

COMPARISONS AT KEY LOCATIONS

To help visualize changes, illustrations comparing proposed development to existing conditions at key locations are shown. The selected locations are not comprehensive, but are representative of proposed trails and bikeways development.

California Coastal Trail: Lincoln Boulevard at Pershing Drive

The trail corridor section occurs just north of the Pershing Drive North intersection on Lincoln Boulevard. Figure 4-7 illustrates existing conditions. Figure 4-8 illustrates the proposed development for Alternatives B and C. The total width of the existing developed area, from the social trail's outside edge just west of the barrier rail to the drainage swale edge on the east, is approximately 15 m (49 ft). By re-striping the traffic lanes to a width of 3.3 m (11 ft), a multi-use trail plus bike lanes in both directions can be accommodated within the current developed width. Detailed evaluation should be conducted during design to determine whether greater separation between the trail and roadway could be provided, or if a barrier rail is required.

Alternative D, Dispersed Use, would provide a pedestrian trail instead of a multi-use trail at this location.

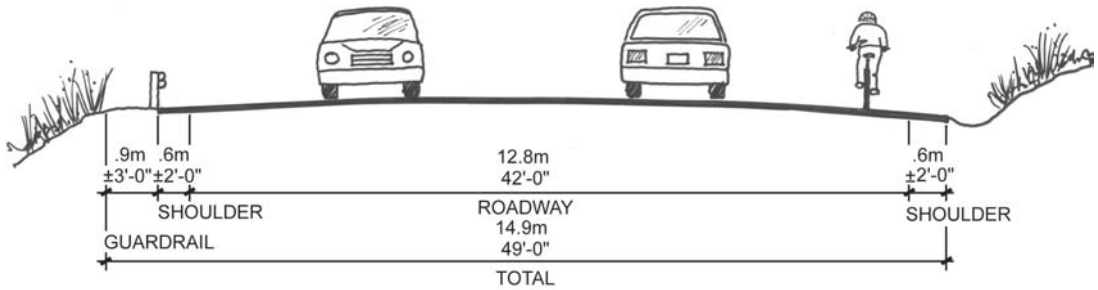

Figure 4-7. *Existing Conditions at Lincoln Boulevard at Pershing Drive North*

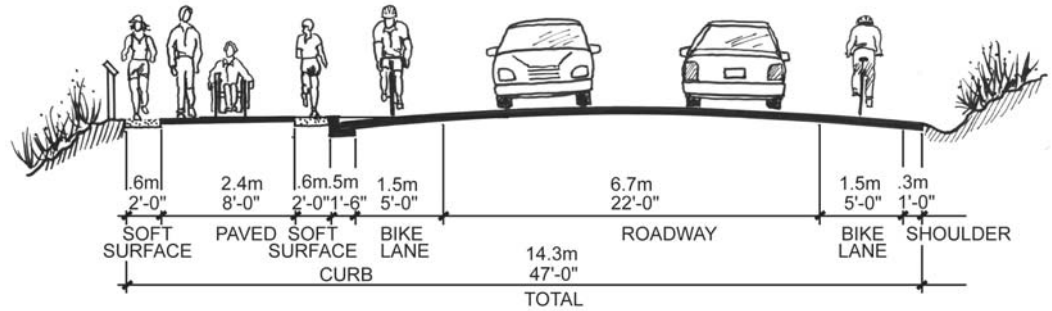

Figure 4-8. *Proposed Development at Lincoln Boulevard at Pershing Drive North*

California Coastal Trail: Lincoln Boulevard at Kobbe Avenue

The developed width of Lincoln Boulevard where Kobbe Avenue intersects is approximately 17.6 m (58.5 ft) between the existing restoration area protection fence on the west and the drainage swale edge on the east (Figure 4-9). By re-striping the roadway consistent with Presidio traffic calming measures, bike lanes, 3.3 m (11-ft) vehicle lanes, and a standard multi-use trail can be accommodated in all action alternatives (Figure 4-10). A buffer planting would be provided between the trail and road. The buffer planting would help reduce the barrier rail's visual impact. The planting would vary slightly in width, depending on location constraints.

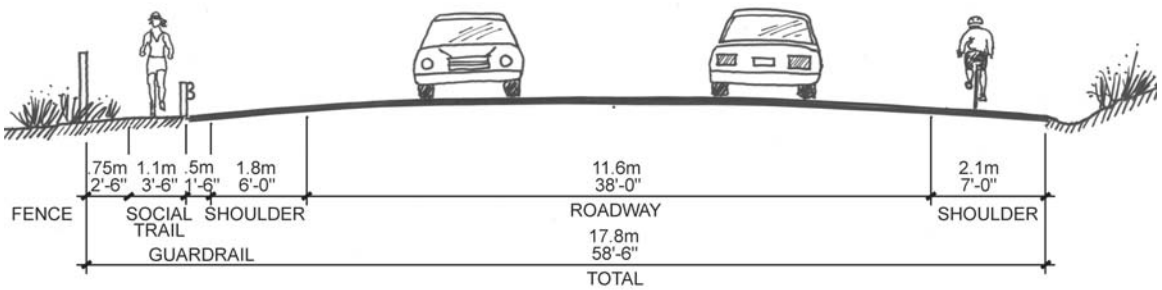

Figure 4-9. *Existing Conditions at Lincoln Boulevard at Kobbe Avenue*

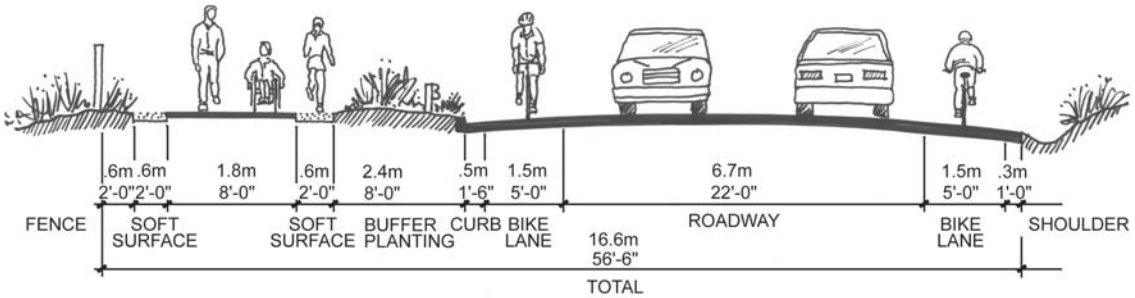

Figure 4-10. *Proposed Development at Lincoln Boulevard at Kobbe Avenue*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

California Coastal Trail: Lincoln Boulevard at Washington Boulevard

The existing corridor just south of where Washington Boulevard intersects Lincoln Boulevard is very narrow, totaling only 9.8 m (32 ft) (Figure 4-11). It is constrained by trees and slopes on the west and a short steep slope and the Washington roadbed on the east. This condition exists for a distance of 30 to 60 m (100 to 200 ft). A standard multi-use trail cannot be constructed without reconfiguring Washington Boulevard and excavating into the hillside, providing a trail structure on the west, or some combination of these. In this section of the corridor, all action alternatives would widen the roadway on the east to maintain safe bike lanes in each direction, but this constricts the California Coastal Trail to only a narrow pedestrian trail (Figure 4-12). On the trail, bicyclists would be required to dismount and walk their bikes in order to protect pedestrians on this multi-use trail section.

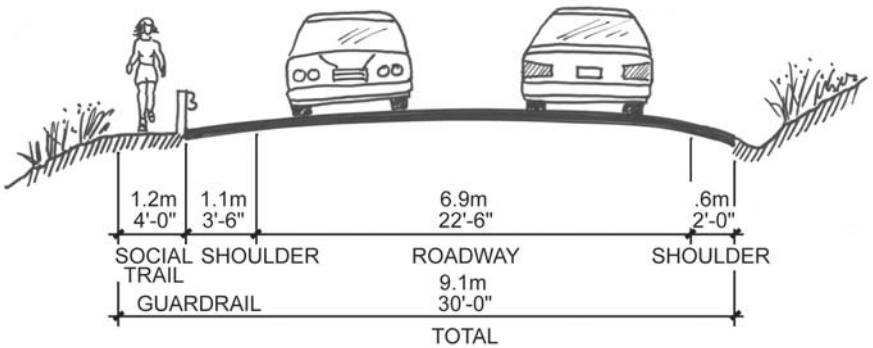

Figure 4-11. *Existing Conditions at Lincoln Boulevard at Washington Boulevard*

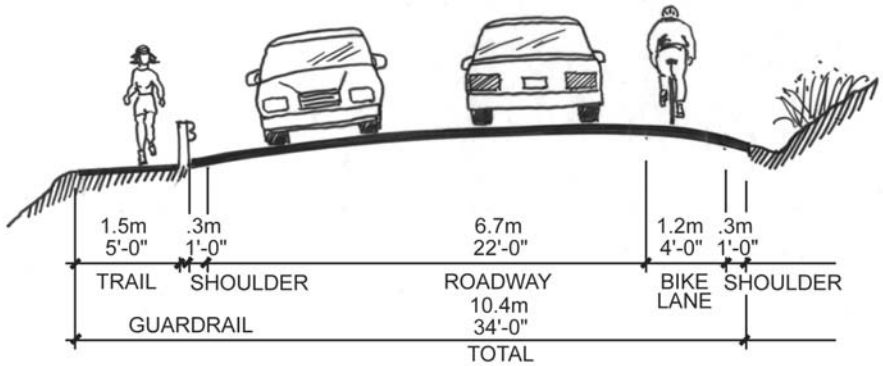

Figure 4-12. *Proposed Development at Lincoln Boulevard at Washington Boulevard*

Presidio Promenade: Lincoln Boulevard at Crissy Field Avenue

The roadway on Lincoln Boulevard just north of the Crissy Field Avenue intersection is wider than necessary for two lanes of traffic, currently leaving room for only a narrow social trail on the east side (Figure 4-13). By re-striping the roadway consistent with Presidio traffic calming measures, bike lanes and a minimum standard multi-use trail could be accommodated in all action alternatives (Figure 4-14). During design, opportunities for greater separation between the roadway and trail should be investigated.

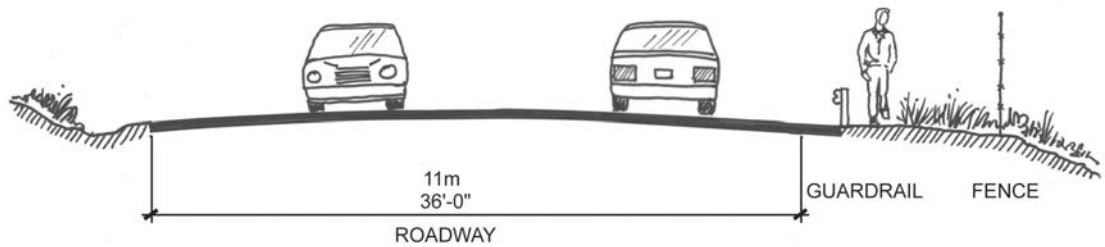

Figure 4-13. *Existing Conditions at Lincoln Boulevard at Crissy Field Avenue*

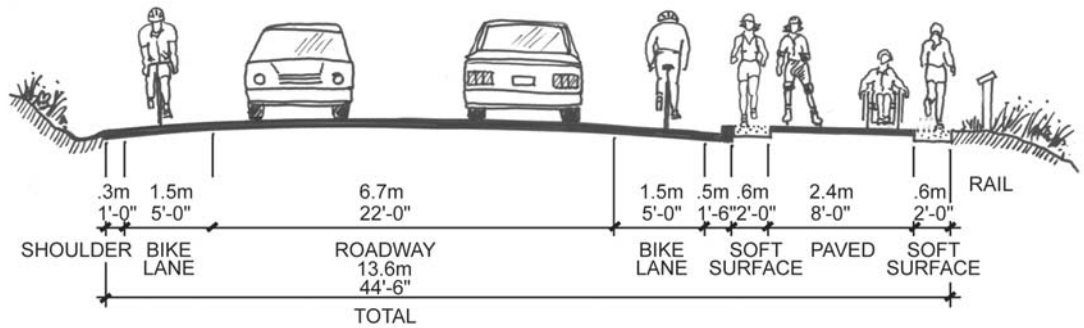

Figure 4-14. *Proposed Development at Lincoln Boulevard at Crissy Field Avenue*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Golden Gate Promenade at Fort Point Extension

Extension of the Golden Gate Promenade from the Torpedo Wharf Mine Depot to Fort Point along Marine Drive is constrained between the breakwater and the foot of steep slopes (Figure 4-15). Bicyclists would continue to share the roadway in this section. Vehicular traffic is generally slow and the number of cars is limited. To increase pedestrian safety, a designated pedestrian trail is proposed in all action alternatives, delineated by a new waterfront rail and surfacing to match the rest of the promenade (Figure 4-16).

Figure 4-15. *Existing Conditions at Golden Gate Promenade at Fort Point Extension*

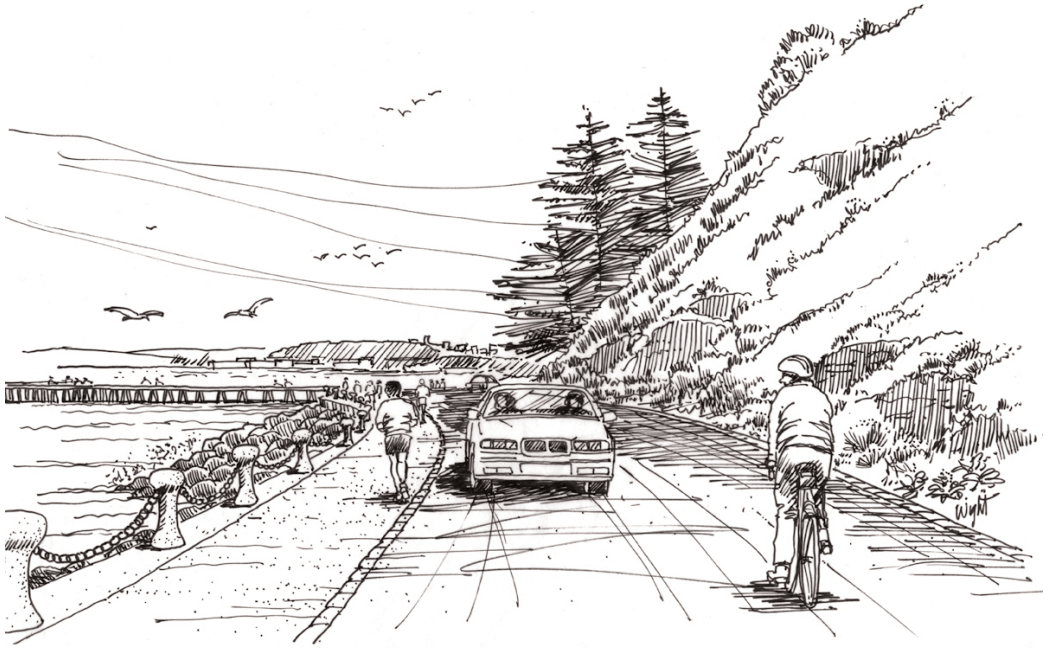

Figure 4-16. *Proposed Development at Golden Gate Promenade at Fort Point Extension*

Ecology Trail Corridor at Arguello Boulevard

Arguello Boulevard is a narrow steep road, popular with cyclists and runners for its direct connection from the Main Post area to the Arguello Gate (Figure 4-17). A portion of the route is immediately adjacent to housing on a steep upslope, and separated from the street by a historic retaining wall. An uphill bike lane is proposed in all action alternatives with a minimum standard multi-use trail on the east side (Figure 4-18).

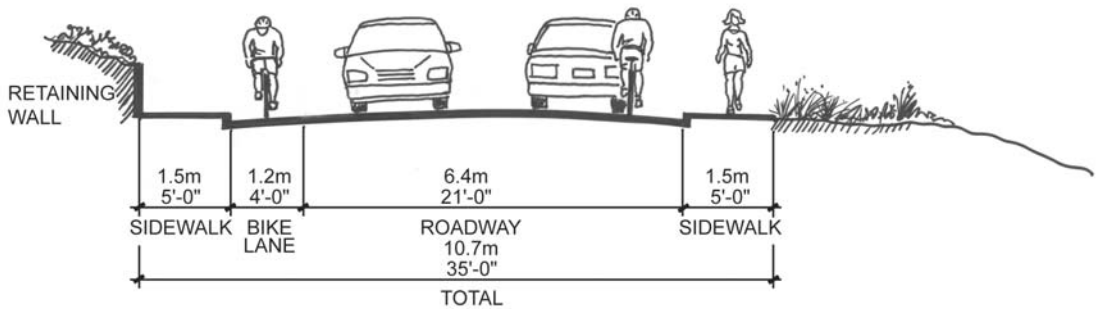

Figure 4-17. *Existing Conditions at Ecology Trail Corridor at Arguello Boulevard*

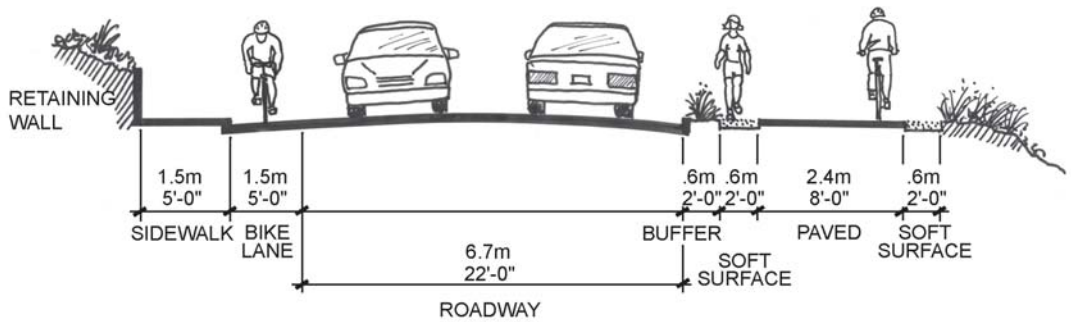

Figure 4-18. *Proposed Development at Ecology Trail Corridor at Arguello Boulevard*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Bay Area Ridge Trail at Washington Boulevard, Nauman Road and Amatury Loop

Existing conditions are illustrated in Figure 4-19. On this stretch of Washington Boulevard, Alternatives B and C call for replacing the existing perpendicular parking with parallel parking (Figure 4-20). Alternative D, Dispersed Use, would maintain existing conditions

In Alternative B, Washington Boulevard would be widened and regraded to provide Class II bike lanes on both sides. The Bay Area Ridge Trail would be put in a new alignment using Nauman Road and Amatury Loop, and then going west through the forest to the existing alignment on Compton Road.

Figure 4-19. *Existing Condition of Bay Area Ridge Trail Corridor at Washington Boulevard*

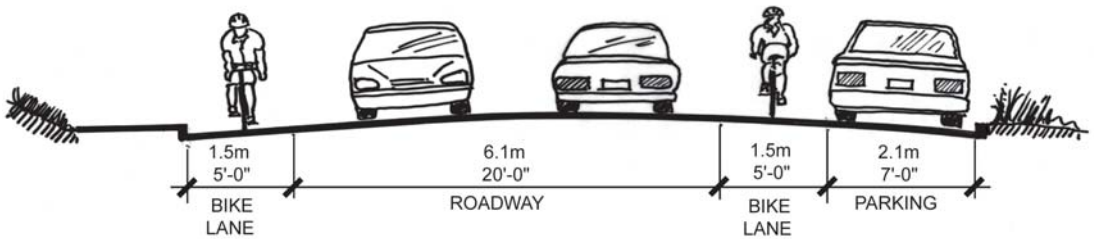

Figure 4-20. *Proposed Development of Bay Area Ridge Trail at Washington Boulevard*

Juan Bautista de Anza Trail at Battery Caulfield Road

This section of the De Anza Trail, just northwest of the Public Health Service Hospital, exceeds a five percent grade and is constrained by a native plant restoration area immediately west of the road (Figure 4-21). Alternatives B and C propose widening and regrading 48 to 90 m (160 to 300 ft) of the roadway to provide an accessible grade, and a sidewalk on the east side (Figure 4-22). Since Battery Caulfield Road would remain a low-volume street for cars, bicycles would share the road going downhill, and an uphill bike lane would be provided.

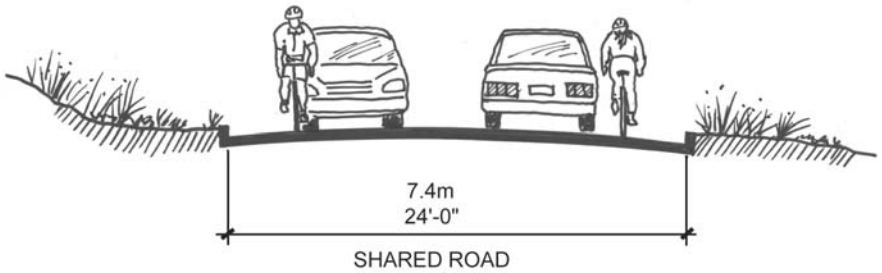

Figure 4-21. *Existing Condition of Juan Bautista de Anza Trail at Battery Caulfield Road*

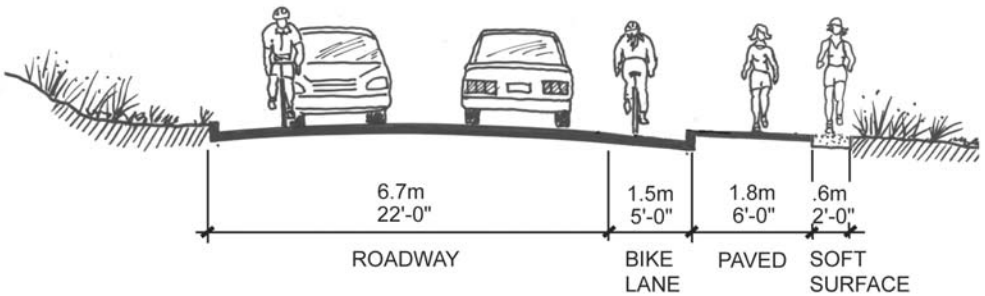

Figure 4-22. *Proposed Development of Juan Bautista de Anza Trail at Battery Caulfield Road*

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

NPS procedures require that the environmentally preferable alternative be identified from the range of alternatives considered in the EA. The environmentally preferable alternative is the alternative that best promotes NEPA's goals. The Presidio Trust and GGNRA are proposing reasonable alternatives to enhance visitor use and experience, support resource management, contribute to a comprehensive transportation strategy, encourage sustainable design and construction and promote stewardship. The evaluation of the alternatives in Chapter 5 suggests that the Mixed Use Alternative (NPS's and the Trust's preferred alternative) is the environmentally preferable alternative because it best enhances visitor use and experience by providing diverse recreational and educational experiences, minimizing user conflicts, improving connections to regional trails, and ensuring access to the Presidio's outstanding natural and cultural resources. This alternative also provides the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable or unintended consequences.

The other alternatives were not identified as environmentally preferable for the following reasons.

- The Shared Use Alternative would actively promote bicycles as a transportation alternative, providing family, visitor and commuter access to major destinations, and therefore best contributes to a comprehensive transportation strategy. However, this alternative would also require the most significant modifications to open land by adding the most linear miles of multi-use trails; it would add the greatest increase in hardened surface on currently undeveloped land.
- The Dispersed Alternative would provide the greatest variety of experience and physical challenge for pedestrians. However, this alternative would not provide consistent and continuous trail connections and therefore would not encourage a reduction in automobile use to, and within, the Presidio.
- The No Action Alternative would avoid construction effects, but would not attain the widest range of beneficial uses identified in Chapter 5 and would not enhance visitor use and experience.

Brenda Tharp

5 Environmental Consequences

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

INTRODUCTION AND METHODOLOGY

In the context of an EA, NEPA requires that federal agencies evaluate the proposed federal action to determine whether it would result in significant effects on the human environment. This chapter analyzes the environmental impacts of the four Trails Plan alternatives on geology, hydrology, biological resources, cultural resources, traffic safety, visitor use, visual resources, air quality and noise. This analysis provides the basis for comparing the beneficial and adverse effects of the alternatives, and includes an assessment of cumulative effects and impairment to park resources or values.[1] The effects on floodplains and environmental justice are also briefly addressed. Chapter 7, Appendices, includes the Finding of No Significant Impact, which concludes the NEPA evaluation of the Trails Plan.

Both NPS and the Trust will use the EA to assist in their respecive planning and decision-making. The Trails Plan/EA is a programmatic plan and EA. Proposed trail routes and designs have not been finalized in every instance, and some connections or routes may be subject to further planning and environmental review prior to implementation consistent with the provisions of NEPA.

NEPA requires consideration of context, intensity, duration and type of impacts associated with project alternatives:

- Context. The context of the impact considers whether the impact would be local or regional. For the purposes of this analysis, local impacts would be those that occur within the immediate vicinity of the Presidio. Regional impacts would be those that would occur in the San Francisco Bay Area.
- Intensity. The intensity of the impact considers whether the effect would be negligible, minor, moderate or major. Negligible impacts would not be detectable and would have no discernible effect. Minor impacts would be slightly detectable, but would not be expected to have an overall effect on the character of the resource. Moderate impacts would be clearly detectable and could have an appreciable effect. Major impacts would have a substantial, highly noticeable influence.
- Duration. The duration of the impact considers whether the impact would occur in the short term or the long term. A short-term impact would be temporary in duration and would be associated with transitional types of impacts or construction-related impacts. Long-term impacts are those effects that would last one year or longer.
- Type of Impact. Impacts were evaluated in terms of whether they would be beneficial or adverse. Beneficial impacts would improve resource conditions. Adverse impacts would deplete or negatively alter resources.

[1]To assure fulfillment of NPS' mission, NPS Management Policies (NPS 2001b) and NPS Director's Order-12, Conservation Planning, Environmental Impact Analysis, and Decision-making (NPS 2000a), require NPS decision-makers to consider impacts, and determine in writing, that a proposed action will not lead to "impairment" of park resources and values before approving the action. The statutory concept of "non-impairment" derives from NPS' enabling legislation, the 1916 Organic Act. Analysis of impairment is not a requirement of the Trust and only applies to lands managed by the NPS (Area A of the Presidio). An analysis and determination concerning impairment of park resources in Area A of the Presidio is made at the end of each resource topic to satisfy the NPS requirement.

GEOLOGIC RESOURCES

Affected Environment

Various soil types have developed over time in the Presidio. Modern urban development has altered distinguishing characteristics of some soil types while others, not disturbed by changes to the topography, remain in their natural state. Wind, water and human disturbance can and have eroded these soils. The extent of erosion depends on the slope, the ability of the soil to infiltrate

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

surface water and the degree of compaction.

The Presidio contains bedrock of the Franciscan Assemblage, a formation consisting of altered volcanic rocks, basalt, chert and sandstone, which originated as ancient sea floor sediments. These can best be seen as outcrops along the irregular, eroded coastal bluffs. Serpentinite, with its green color and soft, slippery appearance, along with associated soils and habitat, is a sensitive natural feature of the Presidio.[2] Serpentine soils can be found along the northern and western coastal bluffs between Battery Crosby and the Golden Gate Bridge. In other areas of the Presidio, wind-blown sand has formed over thousands of years.

Environmental Consequences

Alternative A: No Action Alternative (Local, Long-Term, Minor, Adverse Impact)

Under the No Action Alternative, the Presidio's geologic resources, particularly the highly weathered, fine-grained soils, the steep, eroded bluffs (e.g., California Coastal Trail), and the low wooded hills (e.g., Ecology and Bay Area Ridge Trails) would continue to be adversely affected by soil compaction and degradation caused by foot traffic on existing trail alignments (particularly on social trails with poorly or infrequently maintained soil). Trails not improved under the current management procedures would continue to be subjected to compaction and degradation, which would increase soil loss through wind and water erosion, and impede natural material deposition and soil development. This wearing-away process would expose an ever-increasing area to accelerated rates of erosion and contribute to formation of scour areas, such as those located along the sand dune bluffs near Baker Beach (e.g., the California Coastal Trail).

Alternative B: Mixed Use Alternative (Local, Long-Term, Minor, Beneficial Impact)

Implementing of the Mixed Use Alternative would recondition many existing designated trails, and remove or recondition non-designated trails that have or could cause adverse impacts to geologic resources. These resources include sensitive areas with developed soil units or geologically sensitive areas. This alternative would install new trails that are designed to avoid adverse impacts to such resources. Removal and rehabilitation of social trails would reduce disruption to natural geologic processes in the Presidio, removing foot traffic in areas near sensitive geologic resources and reducing access to sensitive areas that are vulnerable to heavy visitor use (such as soils susceptible to erosion in the Inspiration Point-El Polin Springs area). Placement and construction of new trails would avoid unnecessary removal or loss of soil or natural earth material. Trails would be constructed to applicable design specifications as defined by NPS and the Trust. Best Management Practices as described in Appendix C include a number of basic design strategies to improve drainage control, stabilize trail cuts on steep slopes, protect eroding and hazardous trail edges and maintain stable trail surfaces on sandy soils. Earthquakes and their associated ground failures are unavoidable and unpredictable and the alternative would not subject Presidio visitors to an increased risk of personal injury resulting from seismic hazards.

Alternative C: Shared Use Alternative (Local, Long-Term, Minor, Beneficial Impact)

Impacts to geologic resources resulting from implementing the Shared Use Alternative would be similar to the Mixed Use Alternative.

Alternative D: Dispersed Use Alternative (Local, Long-Term, Minor, Beneficial Impact)

Impacts to geologic resources resulting from implementing the Dispersed Use Alternative would be similar to the Mixed Use Alternative.

[2]Serpentine soils in the Presidio, which host two of California's rarest plant communities (serpentine grasslands and serpentine coastal bluffs), as well as other soil types found in the Presidio, create habitat for seventeen special status plants.

Impairment

Implementing the alternatives would not result in impairment of park resources or values related to geologic resources.

HYDROLOGIC RESOURCES

Affected Environment

Three primary watershed basins in the Presidio, Western watershed, Lobos Creek watershed and El Polin watershed, drain directly to the bay or ocean. About 16 h (40 ac) of the 596 h (1,491 ac) park (surrounding the Public Health Service Hospital) drain into the City of San Francisco's combined storm water/sewer system.

The four major fresh water resources in the Presidio are Lobos Creek – which supplies drinking water to the Presidio – Mountain Lake, El Polin Spring and an unnamed spring located between Rodriquez and Sanchez Streets. Other features include wetlands, seasonal drainages and seeps. Although most of these water features have undergone alteration from their natural state sometime in the past, they existed at the Presidio prior to European settlement and development.

Crissy Marsh, a recently restored tidal marsh, is a 7.3 h (18 ac) water feature that receives stormwater flows and limited perennial flows from the Tennessee Hollow watershed.

Groundwater at the Presidio occurs within Franciscan bedrock and overlying unconsolidated sediments. The quantity of groundwater is highly dependent on the type and thickness of the geologic materials present.

Water quality at the Presidio has been affected by past activities, such as creating landfills, installing of underground petroleum and oil storage tanks, and using herbicides, fungicides and insecticides while the U.S. Army managed the Presidio. Nonpoint-source runoff from roads and parking lots can affect water quality by introducing organic chemicals and heavy metals.

The Presidio's Stormwater Management Plan (Dames & Moore 1994), which is currently being updated, contains a stormwater pollution prevention plan that outlines erosion and sedimentation prevention control measures to avoid contamination of storm drains and surface water resources. In many areas, stormwater runoff is treated with oil and water separators prior to discharge. The quality of surface water samples at Lobos Creek, Mountain Lake and El Polin Springs is generally good.

Environmental Consequences

Alternative A: No Action (Local, Long-Term, Minor, Adverse Impact)

The trails network in the Presidio would continue to affect surface water hydrology under the No Action Alternative. Existing poorly maintained trails and social trails would continue to redirect surface water flows, initiate soil erosion, and affect water quality due to sediment transport. Hydrologic features would continue to be affected by sedimentation and water quality impacts associated with trail alignments, particularly where a poorly designed trail or social trail traverses an area close to such features as a water body, natural groundwater seep or spring.

Alternative B: Mixed Use (Local, Long-Term, Minor, Beneficial Impact)

Surface Water. Improvements to the pedestrian trails and removal of social trails under the Mixed Use Alternative would minimize concentrated runoff, reduce sediment transport, and improve the quality of collected surface water. New and restored trails, such as the multi-use and pedestrian trails proposed along the Coastal Bluffs and in the Mountain Lake area, would be constructed to reduce formation of erosional features. For example, new trails would have permeable surfaces to distribute runoff through the bed

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

material of the trail or would be out-sloped to prevent gullying. Trail slopes and gradients would comply with standard guidelines so that concentrated quantities of surface water would not run off at velocities capable of removing trail base material. Appropriate design would drain surface water from the trail to avoid ponding and development of soft, muddy surfaces that can lead to soil degradation and water quality impacts. The design of trail features that intersect natural surface water bodies, such as bridges or wooden boardwalks (e.g., Lobos Creek Trail), would include measures to avoid or reduce interference with the feature's natural flow dynamics.

Replacement of certain existing social trails with planned pedestrian routes (e.g., Battery Crosby area, Rob Hill area, Inspiration Point) would discourage formation of new social trails, thus contributing to restoring natural surface water flow regimes and allowing natural runoff processes to prevail. Improvements to existing trails and placing new multi-use trails in areas adjacent to hydrologic features would reduce the likelihood of sedimentation and water quality impacts associated with visitor use of poorly designed or degrading trail alignments. Trail regrading and improvements would allow visitors to access the Mountain Lake and Lobos Creek Valley areas without causing adverse impacts to shoreline soils and water quality, and avoiding the damaging effects of current use of social trails, including surface water erosion, sedimentation, and the introduction of human and animal wastes into surface waters.

	ALTERNATIVE			
	No Action km (mi)	**Mixed Use km (mi)**	**Shared Use km (mi)**	**Dispersed Use km (mi)**
New Hardened Trail Surface				
New Pedestrian Trail	0	4.3 (2.7)	1.6 (1)	8.2 (5.1)
New Multi-Use Trail	0	10.4 (6.5)	11.9 (7.4)	2.4 (1.5)
Subtotal	**0**	**14.7 (9.2)**	**13.7 (8.5)**	**10.6 (6.6)**
Hardened Surfaces to Remain				
New Trails on Existing Hardened Surface	0	42.2 (26.4)	40 (24.8)	41.7 (25.9)
Existing Designated Trails to Remain (Hardened Surface)	30 (18.6)	26.9 (16.8)	30 (18.6)	30 (18.6)
Subtotal	**30 (18.6)**	**69.1 (43.2)**	**70 (43.4)**	**71.7 (44.5)**
Hardened Trails Restored to Vegetation				
Existing Hardened Trail Surface to be Revegetated	0	0.0	0.0	0.0
Social Trails to be Restored to Vegetation	0	-7 (-4.4)	-8.7 (-5.4)	-7 (-4.8)
Subtotal	**0**	**-7 (-4.4)**	-8.7 (-5.4)	**-7 (-4.8)**
Changes to Social Trails (Considered Hardened)				
Social Trail to Pedestrian Trail	0	5.8 (3.6)	2.9 (1.8)	1.9
Social Trail to Multi-Use Trail	0	3 (1.9)	4.4 (2.7)	0.5
Social Trails to Remain	9.9	0.0	0.0	0.0
Subtotal (Hardened Trail Surface to Remain)	**0**	**8.8 (5.5)**	**7.3 (4.5)**	**8.2 (5.1)**
Total Increase in Hardened Surfaces	0	23.5 (14.7)	12.3 (7.6)	11.1 (6.9)
Total Designated Trails	**30 (18.6)**	**85.6 (53.5)**	**82.3 (51)**	**82.9 (51.4)**

Table 5-1: *Changes to Trail Surfaces*

New and rehabilitated trails would be constructed to avoid other hydrologic features, especially the sensitive areas surrounding groundwater seeps and springs. Best management practices would be used during trail construction activities to minimize erosion, surface runoff, and siltation of any creek, spring, or water body. Trails would be constructed to applicable trail design specifications. Appropriately engineered base material such as gravel, or crushed rock would underlie proposed paved trails. Non-paved trail surfaces would be compacted, surfaces composed of sand, gravel or crushed rock or other materials described in Chapter 3. Trails would be designed with adequate

drainage to divert sheet and gully flow that could result from rainstorms. The drainage systems would be designed to maintain the natural function of the hydrologic system. Diverted runoff would be dissipated to avoid rills, gullies, loss of soil, and water quality degradation.

The proposed increase in the amount of trails throughout the Presidio for the Mixed Use Alternative would increase the amount of hardened surface by 3.8 h (9.6 ac) on what is now open, unpaved land (see Table 5.1). This would increase the amount of surface water requiring preventive erosional measures (as outlined in Appendix C and the Stormwater Management Plan) as well as increase the potential for minor impacts in the form of increased concentration of runoff and sediment.

Groundwater Recharge. Incremental increases in hardened surfaces proposed by the Mixed Use Alternative would result in an incremental increase in stormwater runoff, although trail runoff would be directed to drainages designed to minimize erosion and sedimentation, as described above, and in some areas would permeate through adjacent swales or natural areas. Hardened trails may be porous, such as a boardwalk or porous asphalt, or they may be non-porous such as normal asphalt, concrete, "Road-Oyl"®, decomposed granite, or compacted soil. Where feasible, auto lane widths, which vary throughout the Presidio, would be reduced to allow trails, or portions of trails to be constructed on what are now existing paved surfaces. An example of this would be along Park Boulevard between Lincoln Boulevard and Washington Boulevard, where much of the road is wide enough to accommodate a trail. Many bike lanes can be accommodated in the current street width such as on Lincoln Avenue between Crissy Field Avenue and the Toll Plaza.

Alternative C: Shared Use (Local, Long-Term, Minor, Beneficial Impact)

The implementation of the Shared Use Alternative would result in more hardened surface, 5.5 h (13.7 ac), compared with the Mixed Use Alternative, 3.8 h (9.6 ac). Preventive erosional measures as outlined in Appendix C and the Stormwater Management Plan would minimize any adverse impact resulting from stormwater runoff. The beneficial effects of trail rehabilitation and reduction of existing social trails under this alternative would outweigh the minor adverse impact to hydrologic resources due to the slight increase in hardened surfaces.

Alternative D: Dispersed Use (Local, Long-Term, Minor, Beneficial Impact)

The Dispersed Use Alternative would result in less hardened surface, 3.4 h (8.5 ac), compared to the Mixed Use Alternative, 3.8 h (9.6 ac). Implementing preventive erosional measures as outlined in Appendix C and the Stormwater Management Plan would minimize any adverse impact resulting from stormwater runoff. The beneficial effects of trail rehabilitation and reduction of existing social trails under this alternative would outweigh the minor adverse impact due to the slight increase in hardened surfaces.

Impairment

Implementation of the alternatives would not result in impairment of park resources or values related to hydrologic resources.

BIOLOGICAL RESOURCES

Affected Environment

Sand dunes, grassland, coastal scrub, freshwater creeks and saltwater marshes were once dominant features in the City of San Francisco, until urban expansion and widespread planting of non-native trees eliminated nearly every indication of dune topography and native vegetation (Wagstaff 1938; Cooper 1967). Today, only fragments of dune topography, native vegetation, rare plants and wetlands remain in the City, and these features mainly occur in the Presidio.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Due to urban expansion, many animals, once plentiful on the San Francisco Peninsula, are now absent and smaller species such as reptiles, amphibians and invertebrates are often restricted to small areas of remnant habitat. While the habitats and populations they support are not large, the Presidio still has a unique and important role to play in supporting wildlife in the Bay Area.

Vegetation and Wildlife. Plant communities located in the project areas[3] include central coast arroyo willow riparian scrub, northern coastal bluff scrub, northern coastal scrub, northern foredune, central dune scrub, central coast live oak riparian forest and serpentine prairie (refer to the Natural Areas described and mapped in the VMP for a description of these plant communities and their associated wildlife). Of the identified plant communities, coast live oak woodland, central coast arroyo willow riparian, mixed serpentine chaparral, northern coastal bluff scrub, serpentine bunchgrass grassland and northern foredune are considered sensitive plant communities because they support a high diversity of native plants and special status plant species, or have limited distribution in the Presidio.

Wildlife Movement Corridors. Wildlife movement corridors link areas of suitable wildlife habitat that are otherwise fragmented by rugged terrain, changes in vegetation, human disturbance, or urban development. Movement corridors are important because urbanization has fragmented or separated open space areas that otherwise would provide for large, sustainable wildlife populations. At the Presidio, movement corridors occur along the coasts of the San Francisco Bay and the Pacific Ocean; in an east-west corridor through the golf course and cemetery; and in a north-south corridor through the developed areas along the eastern Presidio boundary. Developed habitats may function as corridors, and thus are included because some resident species (as opposed to migrant species) appear to use these areas more readily than more naturally vegetated habitats (Poague et al., 2000).

Special Status Species. A total of 17 special status plant species are known to occur in the Presidio, five of which are federally listed as endangered or threatened, occuring on serpentine and/or sandy soils. Of these federally listed plant species, existing populations of Presidio clarkia (*Clarkia franciscana*), San Francisco Lessingia (*Lessingia germanorum*), Raven's manzanita (*Arctostaphylos hookeri ravenii*), and Marin dwarf flax (*Hesperolinon congestum*) occur within 30 m (100 ft) of proposed, constructed or enhanced trail footprints. Proposed future habitat is described in the Draft Recovery Plan for Coastal Plants of the San Francisco Peninsula (Coastal Plan) (USFWS 2001) and the Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (Serpentine Plan) (USFWS 1998).

Four species of nesting passerines (songbirds), several species of nesting raptors, and populations of California quail may occur in or adjacent to the project area during the nesting season (February 15 through August 15). This includes several locally uncommon birds that have been identified on the Presidio, and others for which suitable habitat has been identified. A brief list of these species includes Western screech owl (*Otus kennicottii*), Hutton's vireo (*Vireo huttoni*), California quail (*Callipepla californica*), Saltmarsh yellowthroat (*Geothlypis trichas*), Red-shouldered hawk (*Buteo lineatus*), Red-tailed hawk (*Buteo jamaicensis*) and American kestrel (*Falco sparverius*).

Wetlands. There are approximately 23.4 h (58.5 ac) of water features, including wetlands, and other special aquatic areas in the Presidio. These areas include those subject to jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act of the United States (CWA), and USFWS wetlands according to the Cowardin classification (Cowardin et. al., 1979).

[3]Defined as 20-ft wide corridors centered on proposed constructed or enhanced trail alignments.

Specific wetland classes identified in the project area are riverine (rivers, creeks, and streams) and palustrine (shallow ponds, marshes, swamps, and sloughs). These include:

- Palustrine unconsolidated bottom (including the open waters of Mountain Lake)
- Riverine upper perennial (main channel of Lobos Creek)
- Palustrine emergent habitat (emergent wetland (e.g., marsh, meadow) throughout the Presidio, including areas near Inspiration Point, Lovers Lane and along Lincoln Boulevard)
- Palustrine scrub shrub habitat (riparian scrub such as willow) habitat at Mountain Lake, El Polin Springs and Lobos Creek)

According to NPS data (Castellini 2001), wetlands likely subject to the jurisdiction of the Corps as waters of the U.S. include areas at Crissy Marsh, Dragonfly Creek, North Fort Scott, Mountain Lake, Lobos Creek and portions of Tennessee Hollow and its tributaries.

Environmental Consequences[4]

Alternative A: No Action (Local, Long-Term, Minor Adverse Impact)

Under the No Action Alternative, many of the existing special status plant species present at the Presidio would remain protected from trail users by fences or designated trails, such as boardwalks, that encourage trail users to remain on the trail. Although many special status plant species and their habitat are currently protected, individual specimens of some populations would remain vulnerable to trampling because of current social trails and future social trails that might be developed. Trampling of special status plants could result in plant mortality and habitat loss, which could cause population decline, a decline in species fecundity rates and an increase in local extinction rates.

Existing wildlife habitats would remain in their current condition along maintained trail and bikeway alignments. Trampling due to the presence of existing and future social trails would continue to accelerate disturbance conditions, disrupting and fragmenting intact native plant and riparian communities and increasing native plant mortality. Trampling could result in native plant displacement by invasive non-native species, altered species composition of plant and animal communities, and habitat fragmentation. Social trails that remain open would adversely affect native wildlife habitat, associated wildlife species, and wildlife movement corridors due to human disturbances such as trampling, excessive noise and rapid movements, and harassment. Disruption of wildlife movement corridors due to habitat loss and/or fragmentation could eliminate travel paths for individual animals as they wander or disperse from their home ranges. The continuation and potential expansion of existing social trails would result in a local, long-term, adverse impact on native and riparian vegetation, including sensitive plant communities, and wildlife habitat.

All Action Alternatives (Local, Long-Term, Minor Beneficial Impacts)

In addition to habitat restoration, the action alternatives would benefit native plant communities, including federally listed plants and wildlife, by managing human access and redirecting access away from sensitive habitat areas. The effects of social trails would be reduced within areas supporting federally listed species or within recovery areas. Prioritization of trail removal activities would be coordinated with both natural resource specialists and trail planners. Within natural areas, trails would typically be located on existing disturbed areas. Disturbed areas include currently sanctioned trails, social trails, old roadbeds, and sidewalks. Trails may be

[4]This section is based primarily on information provided in the July 23, 2002 USFWS Final Biological Opinion (USFWS 2002) for the project, which applies to federally endangered or threatened plant species. A copy of the Final Biological Opinion is on file in the NPS and Trust offices, and is incorporated here by reference.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

realigned to reduce erosion or to bypass sensitive areas. The conversion of informal trails to designated trails would be reviewed by a multi-disciplinary natural resources team to ensure that the existing alignment had no negative effects on federally listed plant habitat. Boardwalks may also be incorporated into trail alignments in habitat for special status species to prevent off-trail use. Trail alignments may be moved as a management practice to allow recovery of sensitive species or reduce erosion. Final trail alignment and construction specifications would be consistent with the appropriate recovery plan objectives when trails fall within recovery unit areas.

Within the lessingia recovery areas (to be determined as part of the forthcoming final Coastal Plan), trails would be designed to the extent practicable to limit habitat effects, improve habitat values, promote flexibility for species population movement, encourage sand movement within the trail corridor and promote persistence of the dune annual community.

Within the potential recovery areas for Raven's manzanita, dwarf flax, and clarkia, trails would be designed to avoid or protect serpentine outcrops and soils that are important recovery habitat.

Trail construction would limit the loss or degradation of hydrological features, including protected wetlands, and/or natural hydraulic processes, and avoid negative effects to surface drainage and groundwater flow rates and direction. Buffers and erosion control measures would be incorporated into projects within habitats for listed species. Where practicable, new trails would be located at least 100 feet from the edge of listed plant habitats. In instances where buffer distance is limited, protective fencing or other protective measures (such as low shrub buffers and boardwalks) around affected habitat may be installed. Plant habitat areas adjacent to project sites would be monitored regularly. If these areas are found to be affected from increased visitor use, protective fencing or other measures would be either installed or modified.

A site-specific revegetation plan would be prepared for each trail project with revegetation needs within habitat(s) for federally listed plants. Treatments would be consistent with the VMP (or any amendments to it). Revegetation of social trail removals would be implemented in a timely manner, typically within six months of disturbance-related construction activities, depending upon habitat type, timing of trail work and availability of native plant propagules. If trail removal activities are discontinued due to lack of resources, an invasive non-native plant control program would be implemented until resources for removal and restoration become available again. To the maximum extent practicable, immediate revegetation would be implemented for federally listed species habitat and recovery areas that have been disturbed by construction or other project-related activities.

Listed plant species would be protected by managing visitor and pet access in special status species habitat and recovery areas. Interpretive materials emphasizing resource and conservation values would be provided where visitors may access habitat with federally listed species. Non-native wildlife control measures would be implemented when necessary and feasible. To protect species under the Migratory Bird Treaty Act, vegetation would be cut only outside of bird nesting season (currently January 15 to August 15) unless monitoring indicates nesting birds are not present.

Existing trails would be surfaced and/or widened and new trails would be constructed in the dunes near Baker Beach housing, Inspiration Point, Lobos Creek Valley, western coastal bluffs and the Tennessee Hollow Creek corridor. Trail construction would occur within or directly adjacent to proposed or existing habitat for the Raven's manzanita, lessingia, clarkia and dwarf flax. All trail planning would be coordinated with future restoration implementation efforts, and

final alignments would be selected based upon avoiding optimum habitat for the listed species. Minimization and compensatory measures included in the Final Biological Opinion (USFWS 2002) and BMP's included in Appendix C would be incorporated into the project to minimize effects to biological resources.

Specific effects for each action alternative by trail segment are described as follows.

Alternative B: Mixed Use

Trail construction activities under the Mixed Use Alternative have the potential to have a short-term effect on a maximum of 1,444 sm (15,540 sf) of existing listed species habitat in natural areas.[5] The potential permanent loss of existing listed species habitat in natural areas is 264 sm (2,838 sf). The potential permanent loss of proposed future habitat is 2,439 sm (26,256 sf). This also accounts for area that would be restored and protected as habitat for federally listed plants.

Multi-Use Trail Segment on Battery Caulfield Road. The Battery Caulfield Road restoration area supports one of the five populations of lessingia found on the Presidio. The construction of a trail segment within the eastern corridor restoration site could temporally eliminate approximately 342 sm (3,680 sf) of existing habitat, and could result in long term or permanent effects to approximately 205 sm (2,208 sf) of existing habitat and 123 sm (1,320 sf) of proposed future habitat for the lessingia. Concentrated visitor activities in the newly constructed trail corridor could also increase off-trail visitor and pet traffic, potentially causing trampling, inadvertent spread of invasive non-native species, and erosion. However, conservation measures such as protective fencing and removing non-designated trails would help ensure protection of the federally listed plant population.

Multi-Use and Pedestrian Trail Segments within the Wherry Housing Area and Graded Area 9. Incremental disturbance from non-designated trail use within sand dune habitat has had some beneficial effects to lessingia habitat because it has created openings for establishment of dune annuals. However, continued incremental and large-scale disturbances could result in inadvertent trampling of federally listed species, erosion, compaction of soils and reduced sand movement. The lessingia would benefit most from large-scale restoration in the Presidio's southwestern area; including the restoration of natural processes like wind disturbance, which creates exposed gaps within the dunes. Trail construction could hinder or allow surface movement of sand, encourage spread of invasive species throughout the trail corridors and subject lessingia to increased trampling and erosion from visitor use. Trail construction would avoid redirecting water flow to avoid causing erosion. The alternative's beneficial effects include removing non-designated trails within the proposed recovery unit and habitat restoration. Social trails not planned for enhancement within the southwestern corner dunes would be removed and restored (actual social trail locations would be identified and documented during trail planning and design within the southwestern corner of the Presidio). To minimize negative effects, trail construction design and implementation would be coordinated and conducted in a manner consistent with restoration goals, recovery objectives and the conservation measures identified in the Biological Assessment (Presidio Trust 2001a) for the Final Biological Opinion. Trail segments in this vicinity would permanently affect 3,979 sm (42,836 sf) of proposed future habitat for the lessingia.

Multi-Use Trail Segment on Quarry Road at Inspiration Point. Realigning Quarry Road could create an increased buffer of approximately 0.9 to 2.4 m (3 to 8 ft) between visitor access and the current eastern distribution of Presidio clarkia. Realignment activities would involve removing fill from the eastern section of the current trail

[5]Effect estimates do not include existing disturbed areas such as road surfaces, trails and social trails.

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(exposing native serpentine soils) and removing the drainage ditch east of the protective fencing, which currently undercuts and erodes the toe of the serpentine slope. Portions of an existing clarkia population currently located east of the protective fencing could be disturbed and/or removed during construction activities. Trail construction design specifications would ensure the protection of the current serpentine grassland topography and local hydrology. Negative effects could arise from an increase in encouraged visitor use as well as off-trail visitor and pet use (although protective fencing and the steep elevation change between the trail and the clarkia population would help ensure protection of the population). Additional consultation during the design specification development, in accordance with Section 7 of the Endangered Species Act of 1973, as amended, may be warranted for this trail segment. The width of historic Quarry Road would remain about the same. Thus, trail realignment could result in temporal effects to approximately 232 sm (2,500 sf) of existing habitat. However, the alternative would result in a net gain of 46 sm (500 sf) of proposed future habitat for the clarkia.

Pedestrian Trail Segment (Batteries to Bluffs Trail) Traversing the Western Serpentine Bluffs. Construction activities required to establish this trail segment as a designated trail would permanently eliminate approximately 684 sm (7,360 sf) of proposed future serpentine habitat. Concentrated visitor activities in the new trail corridor could increase off-trail visitor and pet use, increasing trampling and erosion. Additionally, disturbance associated with trail construction and maintenance could increase the spread of non-native plant species, as well as continue to fragment habitat. However, providing a clear designated route on a boardwalk-type trail where none currently exists to concentrate visitor activities could also benefit special status species habitat. Interpretive signs would educate visitors of habitat concerns. The alternative's beneficial effects would also include the removal and subsequent restoration of social trails, focused visitor use on designated trails, correction of some drainage problems, and increased safety.

Non-designated Trail Segments Traversing the Western Serpentine Bluffs. Trail removal and restoration would expand and enhance serpentine habitat. Restoration activities such as soil decompaction and invasive species eradication would generally benefit Raven's manzanita, clarkia and dwarf flax through seed scarification, removing competition and providing additional habitat that under current conditions do not exist. Adverse effects resulting from social trail removal activities could include burial of existing seed banks and losing soil disturbing activities that may be necessary for seed scarification. Closing and removing social trails would result in a minimum permanent gain of 3,035 sm (32,670 sf) of proposed future serpentine bluff habitat for Raven's manzanita, clarkia and dwarf flax.

Pedestrian Trail Segment Providing Access to Lobos Creek from the Lobos Dunes Boardwalk. Trail construction could potentially result in the loss of lessingia specimens via removal, destruction or burial of individual plants and seed. Increased visitor activities in the newly constructed trail corridor could increase the potential for trampling and erosion. Additionally, disturbance associated with trail construction and maintenance would fragment habitat, increase the potential spread of invasive non-native species and could reduce movement of sand in the corridor. The construction of the boardwalk trail would temporarily eliminate approximately 252 sm (2,800 sf) of existing habitat and permanently eliminate 56.7 sm (630 sf) of existing habitat for the lessingia.

Pedestrian Trail Segment North of the PHSH (East-West Traverse). Trail construction could limit movement of sand, increase the potential for the transport of invasive non-native species, and

attract off-trail visitor and pet use which could increase trampling and erosion. To minimize any effects, all trail construction design and implementation would be coordinated and consistent with the recovery objectives for the lessingia as described in the forthcoming final Coastal Plan. Beneficial effects are the same as those discussed under the effects described for the multi-use trail segment on Battery Caulfield Road. Trail construction would temporarily affect 609 sm (6,560 sf) of existing habitat and would permanently eliminate 451 sm (4,854 sf) existing habitat.

Multi-Use Trail Segment North of Battery McKinnon-Stotsenberg. Construction activities required to establish this existing 2.4 to 3.6 m (8 to 12 ft) wide (and degraded) trail footprint along the Bay Area Ridge Trail near the Rob Hill Campground between Hunter Road and Compton Road as a multi-use trail would have no effect on existing habitat but would result in a permanent loss of 232.8 m (764 lf) of proposed future habitat for the lessingia. Beneficial effects would include managed visitor and pet access and correction of erosion problems.

Alternative C: Shared Use

Trail construction activities resulting from the Shared Use Alternative have the potential to have a short-term effect on a maximum of 1.3 h (3.2 ac) of existing listed species habitat in natural areas. The potential permanent loss of existing listed species habitat in natural areas is 0.9 h (2.3 ac). This alternative would also result in a permanent loss of 0.8 h (2 ac) of proposed future habitat. This also accounts for areas that would be restored and protected as habitat for federally listed plants. Specific effects for this alternative would be the same as the Mixed Use Alternative with the exceptions described below.

Multi-Use and Pedestrian Trail Segments within the Wherry Housing Area and Graded Area 9. This alternative would create a permanent loss of 4000 sm (47,916 sf) of future habitat in this segment.

Pedestrian Trail Segment North of the PHSH (East-West Traverse). This alternative would temporarily affect 2000 sm (23,958 sf) of existing habitat and would permanently eliminate 1080 sm (4,356 sf) of existing habitat for the lessingia.

Alternative D: Dispersed Use

Trail construction activities associated with the Dispersed Use Alternative have the potential to have a short-term effect on a maximum of 7000 sm (78,408 sf) of existing listed species habitat in natural areas. The potential permanent loss of existing listed species habitat in natural areas is 5000 sm (56,628 sf). This alternative would also result in a permanent loss of 7000 sm (78,408 sf) of proposed future habitat. This also accounts for area that would be restored and protected as habitat for federally listed plants. Specific effects for this alternative would be the same as the Mixed Use Alternative with the exceptions described below.

Multi-Use and Pedestrian Trail Segments within the Wherry Housing Area and Graded Area 9. This alternative would result in the loss of 2000 sm (23,958 sf) of future habitat.

Pedestrian Trail Segment (Batteries and Bluffs Trail) Traversing the Western Serpentine Bluffs. This alternative would not result in the permanent loss of existing or future habitat along this trail segment.

Pedestrian Trail Segment North of the PHSH (East-West Traverse). This alternative would temporarily affect 360 sm (4,000 sf) of existing habitat and would permanently eliminate 486 sm (5,400 sf) of existing habitat for the lessingia.

Impairment

The integrity of natural resources are a key element of the Presidio. Implementation of the alternatives would not impair NPS resources or values related to biological resources. The action

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alternatives would improve the long-term health of resources that are "key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park" (NPS 2001b).

CULTURAL RESOURCES

Affected Environment

The Presidio of San Francisco was designated a National Historic Landmark (NHL) in 1962. With a period of significance from 1776 to 1945, the Presidio is recognized for its use as a Spanish colonial, Mexican and U.S. Army military post. In 1993, the landmark designation was updated to further identify this valuable resource (1993 NHL Update). At that time, more than 650 buildings, sites, structures and objects were considered as contributing to the significance of the NHL as a district. The update includes both cultural landscape resources, including the historic forest and archaeological resources.

Examples of archaeological resources known to exist in the Presidio include late 18th century building foundations and subsurface remains of past uses. In addition to known prehistoric sites along Crissy Field, several areas have been identified as archaeologically sensitive because of the discovery of additional prehistoric sites. These are the Estuary Bluff, which overlooks the former marshlands along the Letterman Complex, the North Cantonment, the Main Post, the Cemetery and Cavalry Stables, additional areas of Crissy Field and the Presidio's natural fresh water sources, such as El Polin Spring, Mountain Lake, Tennessee Hollow and Lobos Creek.

Environmental Consequences

Alternative A: No Action (Negligible, Adverse Impact)

The No Action Alternative would have a long-term, negligible, adverse impact on historic or architectural resources, including the cultural landscape. While no new trails would be developed, the number of park visitors would increase and demand would grow to access other locations in the park. Consequently, the number and length of social trails would likely increase. Existing and additional social trails could affect the cultural landscape (including the historic forest and strategic vistas) and archaeological resources by increasing erosion, degrading vegetation and increasing wear and tear on structures. The intensity of impacts would depend upon the nature and location of the social trail, as well as the quantity and data potential of the archeological sites.

Alternative B: Mixed Use (Negligible, Adverse Impact)

The Mixed Use Alternative would add 56 km (35.1 mi) of trails in the park. This increase would change the character of the cultural landscape at the Presidio somewhat in some areas (e.g., by adding a multi-use trail along a historic road corridor). However, the width, surfacing and general appearance of the historic road corridors on the Presidio have changed over time as the Presidio's development footprint expanded. In cases where a historic curb or retaining wall defines the edge, that feature would be preserved. Also, in cases where existing trail alignments are historic (e.g., Lovers Lane), these would be preserved. The overall impact on the cultural landscape would be detectable, but would not be expected to have an overall effect on the NHLD because some of the new trails (7.7 km or 4.8 mi) replace existing social trails or are presently pedestrian trails or service roads to be converted to a multi-use trail. In addition, the new trails would be designed and constructed to visually blend with the existing topography and vegetation patterns to the maximum extent feasible. Trail surface materials would be tinted to blend in with surrounding terrain, and historic materials such as red chert would be used if appropriate. Trails would also provide controlled access to historic

batteries, buildings and landscapes throughout the Presidio.

Proposed construction activities would occur primarily in previously disturbed areas such as along existing road prisms and social trails. Disturbance to historic fabric, removal of individual trees or alteration of character-defining features of the historic forest would be minimized. Final design of the trails would be reviewed by qualified personnel having experience in cultural landscape preservation prior to construction to ensure that cultural landscapes are adequately protected. In addition, proposed construction activities would be coordinated with the reforestation and natural areas restoration efforts under the VMP and done in accordance with the Secretary of Interior's Guidelines for Treatment of Cultural Landscapes (NPS 1996b). All ground-disturbing construction activities would be subject to archaeological monitoring in accordance with the NPS/GGNRA Programmatic Agreement (PA) (NPS 1994b) or the Presidio Trust PA (Presidio Trust 2002c) Stipulation XIII and the Presidio Archaeological Monitoring Protocols (whichever is applicable at the time of monitoring). Removal of 15.9 km (9.9 mi) of social trails would lead to long-term benefits to surface and underground resources by confining the effects of paths and reducing erosion. However, some new trail segments would pass through archeologically sensitive areas and other areas may be found to have historic or prehistoric sites or artifacts. Additionally, other as yet unknown historic or prehistoric areas in the Presidio may be discovered. Should that occur, NPS or the Trust would follow 36 CFR, Part 800 of the National Historic Preservation Act procedures outlined in their respective PAs. NPS and the Trust would seek to avoid archaeological features through the following options, listed in order of preference:

1) *Relocation*: Relocate the trail segment to an adjacent area that does not cross the site.
2) *Fill*: Apply a separating geotextile layer and filling over the site with a thick layer of stabilized granular material.
3) *Pave*: Pave over the site in the trail area and use a fence or in other ways confine users to the trail.
4) *Bridge*: Only if relocation, fill or paving are not feasible, build a bridge over the site.

If avoidance is deemed infeasible, consultation with the State Historic Preservation Officer in accordance with 36 CFR Part 800 and the provisions of the applicable PA would be implemented. Mitigation would include controlled excavation prior to construction, using scientific recording methods and recovery of any significant cultural materials or information. Archaeological excavations would proceed in accordance with a research design and data recovery plan based on background data, sound planning, and accepted archaeological methods. The data recovery plan would provide for the reporting and dissemination of results, as well as interpretation of what has been learned in a manner that is accessible and understandable to the public. Appropriate arrangements for the permanent curation of archaeological materials and records would be carried out in accordance with federal regulation 36 CFR Part 79. All archaeological work to be carried out would be under the supervision of persons meeting the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-44739).

Alternative C: Shared Use (Negligible, Adverse Impact)

The Shared Use Alternative would add the smallest amount of new trails (51.9 km or 32.4 mi) compared to the other Action Alternatives. However, impacts on the cultural landscape at the Presidio would be the same as the Mixed Use Alternative. Construction activities would occur primarily in previously disturbed areas such as along existing road prisms and social trails. Disturbance to historic fabric would be

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minimized; historic curbs, retaining walls and historic trail alignments would be preserved; and historic materials would be used if appropriate. Alteration of character-defining features of the historic forest and removal of individual trees would be minimized. Archaeological monitoring would occur in accordance with applicable PAs and protocols. Procedures outlined in the PAs would be followed in the event historic or prehistoric sites or artifacts are discovered. Therefore, while the impact on individual resources would be detectable, the alternative is not expected to have an overall effect on the NHLD.

Alternative D: Dispersed Use (Negligible, Adverse Impact)

The Dispersed Use Alternative would add fewer new trails (52.5 km or 32.8 mi) than the Mixed Use Alternative (56.2 km or 35.1 mi). However, impacts on the cultural landscape at the Presidio would be the same as the Mixed Use Alternative. The impact on individual resources would be detectable but the alternative is not expected to have an overall effect on the NHLD.

Impairment

None of the alternatives would result in impairment of park resources or values related to cultural resources.

TRAFFIC SAFETY

Affected Environment

Access to the Presidio. Roadways leading into the Presidio and providing access for motor vehicles, transit vehicles, bicycles, and pedestrians include Lincoln Boulevard, Merchant Street, 15th Avenue, Arguello Boulevard, Presidio Boulevard, Lombard Street, Gorgas Avenue, and Marina Boulevard. Within the Presidio, the public has unregulated motor vehicle access to the vast majority of local roadways. Some intersections are controlled by stop signs and posted speeds are slow.

Presidio Roadway/Trail System. Trails for bicyclists and pedestrians run along and across many roads in the Presidio, including Lincoln Boulevard, Ralston Avenue, Washington Boulevard, Battery Caulfield Road, Park Boulevard, Arguello Boulevard, Infantry Terrace, Marine Drive, Long Avenue, Mason Street and Presidio Boulevard. These roads typically have two travel lanes, with pavement widths ranging from about 6 m (20 ft) to over 11 m (36 ft). Sidewalks are provided along portions of some, but not all, of the roads and marked crosswalks are provided where some, but not all, of the trails cross the roads.

City Bike Routes in the Presidio include # 95 (on the California Coastal Trail), # 65 (on the Bay Area Ridge Trail), # 69 (on the De Anza Trail) and #'s 2, 4, 55, 61, 195, 202 and 295.

Presidio Parking Facilities. Parking is provided at primary vista points, near a number of trails and near housing units and office buildings throughout the Presidio. Parking spaces are located along roads in areas of the roadway margin either designated for parking or used for that purpose informally. Paved parking lots are also provided within the Presidio, mostly associated with existing developed areas (e.g., the Main Post). In general, the Presidio is oversupplied with parking compared to present and estimated future demand. Both the GMPA and the PTMP call for reducing the overall amount of parking over time.

Traffic Safety Conditions. These are roadway segments where pedestrians, bicyclists and motorists either share a narrow paved space (e.g., on Long Avenue and Marine Drive) or have minimal physical separation (e.g., portions of Lincoln Boulevard and Washington Boulevard). There intersections with no delineated crossing control (e.g., California Coastal Trail near Lincoln Boulevard and Kobbe Avenue and Washington Boulevard between Arguello Boulevard and Park Boulevard). Areas also exist where pedestrians and

bicycles share trails with limited physical separation (e.g., along the Crissy Field Promenade). There also are locations where trails cross roadways with no delineation of the crossing or where the delineation of the crossing is insufficient (e.g., several locations on Lincoln Boulevard).

The current roadway network and pedestrian facilities were established by the U.S. Army and were built to military standards over a long period of time. In many cases, the park has remnants of facilities that were built before modern transportation standards were developed. Bicycle access was not historically considered in the development of Presidio roadways and trails between different areas of the Presidio were not widespread. With the Presidio's change from a military base to a national park site, a new set of traffic safety issues has developed, with current users expecting that facilities would be built to modern civilian standards.

Environmental Consequences

Alternative A: No Action (Local, Long-Term, Minor Adverse Impact)

Under the No Action Alternative, the existing (primarily discontinuous) network of substandard pedestrian trails, multi-use trails, bikeways and social trails would remain substantially unchanged. Standard maintenance activities would be undertaken and social trails would be eliminated over time, consistent with the VMP. This alternative would not reconfigure the current network of trails for pedestrians and bicyclists, which generally provides limited or no physical separation between these users and automobiles. The discontinuity of trails and bikeways would not increase opportunities for recreational or commuter bicycle use and therefore would not therefore encourage reduction in automobile use to, from and within the Presidio. Roadside social trails generally would continue to be unbuffered from vehicular or bicycle traffic. Existing discontinuities on trails that connect to transit stops would remain.

Alternative B: Mixed Use (Local, Long-Term, Moderate Beneficial Impact)

The Mixed Use Alternative would provide about twice as many designated off-street trails as currently exist. The alternative would moderately reduce the potential for conflicts between automobiles, pedestrians and bicyclists within the trail corridors by separating pedestrian and bicycle use from automobile use. Pedestrians and bicyclists would be accommodated within the various trail corridors by a series of pedestrian trails, multi-use trails and/or bikeways. Multi-use trails would be engineered to meet AASHTO standards, including buffer widths to separate trails from roadways. The widths of trails would be sized to provide room for safe pedestrian and bicycling activities, minimizing the potential for conflicts between these modes of transport. Trail intersections with roadways would be marked with appropriate pavement treatments and signage to alert motorists and trail users to the presence of the crossing. Roadway intersections (e.g., Lincoln/Bowley, Lincoln/Kobbe and Lincoln/Merchant) would be reconfigured to improve bicycle, pedestrian and automobile safety by improving sight distances, realigning awkward geometrics and reducing grades.

In addition, a network of bike lanes and routes would be provided on roadways for bicyclists riding at higher speeds, either in bike lanes (i.e., separate pavement width delineated by striping), unmarked wide shoulders or in shared lanes on low-volume roadways. The amount of existing marked, designated on-street bike lanes would increase from 3.7 km (2.3 mi) to 23 km (14.4 mi). These separate facilities would provide options for serious cyclists, further reduce the potential for pedestrian/bicycle conflicts on new multi-use trails, and encourage the use of bicycles as an alternative to the private automobile.

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This alternative includes possibily closing Crissy Field Avenue between Mason Street and Lincoln Boulevard (uphill section) to auto traffic to provide for bicycle and pedestrian use. Transit and emergency access would be maintained. In addition, this alternative includes possibily closing Washington Boulevard between Arguello Boulevard and Lincoln Boulevard to through-traffic on weekends.

Short-term impacts on drivers from road closures would include the inconvenience of detours and having to learn new routes. Drivers would be informed in advance of road closures through signage and NPS and Trust publications. Detour/alternate cross-park routes would be designated, improved to handle increased traffic, and clearly signed in advance of closures as necessary. Road closures would be coordinated with the U.S. Park Police and appropriate transit agencies, if needed.

Implementation of this alternative may also involve narrowing the auto traffic travel lanes of park roadways to provide for bicycle and pedestrian use. In general, narrowing vehicle travel lanes would be proposed to minimize or avoid impacts to natural or cultural resources arising from the addition of bikeways, pedestrian facilities and/or multi-use trails. Travel lane narrowing would be limited to the minimum required to avoid sensitive resources. On roadways where speeds are low, the grade is slight and volumes are minimal, narrowing travel lanes would be easily achieved, with no effect on motorists (for example, on Moraga Street or Funston Avenue in the Main Post area). In other areas, narrowing the travel lanes would result in a small reduction in travel speed for vehicles and associated vehicle capacity. This impact would be minor, and capacity implications would not significantly increase congestion.

On major roadways, reductions in lane width would be considered carefully in the design of suggested trail and bikeway improvements, and would be balanced with vehicular safety concerns. Roadway cross-sections in Chapter 4 and the explanations of design exceptions in Chapter 3 acknowledge this process of considering potential impacts and benefits, and adjusting proposed improvements as necessary to avoid deleterious effects. Parking space reduction or relocation may occur, such as along Washington Boulevard between Arguello and Park Boulevards. Impacts on parking would be coordinated with parking planning at the Presidio.

Implementation of this alternative would most likely require design exceptions (e.g., features such as narrow bike lanes and/or multi-use paths, steep grades, sight distances, and design speeds that do not meet minimum design standards) in order to provide improved access and safety for bicyclists and pedestrians, and to protect natural and cultural resources. Design exemptions would be granted after careful study by qualified traffic engineers to determine that implementation of the project would provide improved conditions for bicyclists, pedestrians and/or automobile traffic over current conditions in terms of access, capacity and/or safety.

Alternative C: Shared Use (Local, Long-Term, Moderate Beneficial Impact)

The Shared Use Alternative would provide about 3½ times as many designated trails as currently exist. Similar to the Mixed Use Alternative, this alternative would moderately reduce the potential for conflicts among automobiles, pedestrians and bicyclists within the trail corridors because it would separate pedestrian and bicycle facilities from auto use areas. This alternative has the greatest extent of multi-use trails (41.8 km or 26.1 mi proposed). The network of multi-use trails would conveniently link main activity and residential areas. This would increase opportunities for recreational and commuter bicycle use, and promote bicycles as a transportation alternative. The alternative would also improve traffic safety by encouraging a reduction in automobile use to, from and within the Presidio.

The same roadways considered for closure to auto traffic under the Mixed Use Alternative would be proposed for closure in this alternative. These closures would result in the same short-term impacts to drivers as they learn alternate routes on their destinations.

Narrowing roads for auto traffic to provide for bicycle and pedestrian use would result in the same short-term impacts on drivers as the Mixed Use Alternative, and would require the same careful consideration prior to implementation. Implementation of this alternative would most likely require design exceptions similar to the Mixed Use Alternative, to avoid safety issues on major roadways, as provided for in Chapters 3 and 4. Impacts to parking would be the same as the Mixed Use Alternative.

Alternative D: Dispersed Use (Local, Long-Term, Minor Beneficial Impact)

The Dispersed Use Alternative would provide about three times as many designated pedestrian trails as currently exist. The alternative would moderately reduce the potential for conflicts between automobiles and pedestrians by providing 13.1 km (8.2 mi) of new pedestrian trails. The alternative would reduce the potential for conflicts between automobiles and bicyclists within the trail corridors only slightly. Because it emphasizes pedestrian-only trails, bicyclists would need to use on-street bikeways to a greater extent than the other action alternatives. This alternative would not provide for marked bike lanes around or in the Main Post, and only uphill bike lanes would be provided on Long and Crissy Field Avenues. With the least amount of interconnected multi-use trails proposed (17.4 km or 10.9 mi), this alternative would provide fewer opportunities for recreational, family and slower-speed bicycle use. In addition, this alternative has about 20 more intersections than the other action alternatives, where pedestrian trails would cross vehicular roads indicated by marked crossings and vehicular speed limits. Safety improvements would be designed for these locations prior to trail implementation. Road closures and narrowing of roads to auto traffic would result in the same short-term impacts on drivers as the Mixed Use Alternative. Impacts on parking would be the same as the Mixed Use Alternative.

Impairment

A key element of the Presidio is opportunities for public enjoyment. Without traffic controls and a reduction of trail crossings, the No Action Alternative could result in minor impacts on public enjoyment, but would not lead to impairment of the Presidio's resources or values. None of the action alternatives would impair national park resources or values related to traffic safety.

VISITOR USE

Affected Environment

The Presidio contains many of San Francisco's highly valued recreation sites and popular open space areas. The park offers a wide range of active pursuits, as well as opportunities for solitude, retreat and discovery. Recreational activities at the Presidio include walking, hiking, running, biking, sightseeing, photography, nature study, surfing, sailing, fishing, camping, sunbathing and picnicking. The Presidio has nearly 30 km (19 mi) of trails and bikeways utilized by neighborhood, city and regional users, tourists and commuters. There are 3.7 km (2.3 mi) of marked bike lanes, 16.5 km (10 mi) of multi-use trails, and 17.7 km (11 mi) of walking/hiking trails. A minimum of 15 km (9.3 mi) of pedestrian trails are unofficial social trails created by park users, but not part of the Presidio's official designated trail system. The Presidio trail system also features five trailheads and six overlooks. National, state and regional trails traversing the Presidio include the Juan Bautista de Anza National Historic Trail, the

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California Coastal Trail, the Bay Area Ridge Trail, the San Francisco Bay Trail and the American Discovery Trail.

Use of the trails and bikeways network is hindered in several areas by access limitations, including disjointed routes, unstable slopes, sandy soils, elevation changes, sensitive natural resources and inconsistent trail conditions.

Environmental Consequences

Alternative A: No Action (Local, Long-Term, Minor, Beneficial Impact)

Under the No Action Alternative, the Presidio would continue to provide a range of recreational opportunities to visitors — from quiet walks though restored native habitats or forest to bicycling along a bayside promenade past centuries of military history. However, the 30 km (19 mi) of trails and bikeways within the park would continue to be somewhat discontinuous and provide limited connections to major Presidio destinations (e.g., between the Lombard Gate and the Golden Gate Bridge). Desired connections (such as between the California Coastal Trail and north Baker Beach) would not be provided. Discontinuous trails and bikeways would continue to make it difficult for commuters traversing the Presidio on foot or by bicycle. The varying trail surfaces and types (e.g., dirt paths, sidewalks, gravel access roads) and the varying bikeways (e.g., wide road shoulders, low-volume shared roadways, striped bicycle lanes) that provide connections across the Presidio would remain. In addition, the hilly terrain and inconsistent trail surfaces, widths and grades would continue to limit universal access to many Presidio recreational experiences, particularly for people with disabilities. The inconsistent provision of trailheads, trail signs and amenities at trailheads and overlooks would also continue to detract from the visitor experience.

Alternative B: Mixed Use (Local, Long-Term, Moderate Beneficial Impact)

Implementing the Mixed Use Alternative would substantially enhance the visitor experience by providing more varied experiences for visitors, improving continuity and connectivity of the trail and bikeway system, improving trail and bikeway conditions and providing new trails, bikeways, trailheads, overlooks and trail signs. Trail types and connections would provide a mix of "urban" (through the built environment) and "wild" (through a natural or forested environment) visitor experiences, and trails would be constructed with varying degrees of physical challenge. Recreational routes would be designed for safe and enjoyable use of park facilities by visitors of all ages and abilities, including accessible connections to major use areas, points of interest, interpretive opportunities and outstanding natural features. Public safety conditions would improve due to the planned closure of many hazardous social trails, the addition of safe street crossings, and weekend or permanent closures of some roads to vehicles. The construction of new, sustainable pedestrian and multi-use trails (in areas such as north Baker Beach and the coastal bluffs) would balance the removal of unsafe and unstable social trails. Visitors accustomed to using these social trails would be directed to other trails in the vicinity.

The alternative would have consistent types of trails (multi-use or pedestrian) based on design specifications consistent with Recommendations for Accessibility Guidelines: Outdoor Developed Areas (U.S. Architectural and Transportation Barriers Compliance Board 1999). The trails would have consistent surface types, widths and grades within individual trail corridors. New trails would typically be separated from vehicles and trail crossings would be marked, thus creating safer routes for park visitors. East-west and north-south trail connections across the Presidio would be created or improved through providing new trail corridors. Trail connections to major use areas, points of interest and natural features would be improved. In addition, the trail continuity of the regional, state and national trails in the Presidio would be improved.

The alternative would improve off-street bicycling opportunities for family and recreational cyclists. Many of the proposed multi-use trails would form continuous loops, which would further enhance the off-street bicycling experience. On-street bicycle routes would be provided for faster cyclists. Bikeways would be improved to include more linear miles of bike lanes, with reduced reliance on wide roadway shoulders for bicycle routes. Trail improvements would also benefit bicycle commuters who travel through the Presidio. These benefits include new trails and connections established between trails to provide commuters with more direct routes to or through the Presidio.

The alternative would substantially increase the number of trailheads, from 9 to 13. Trailheads would provide consistent information, orientation, and amenities for visitors. Similarly, new trail signs would be installed throughout the Presidio, providing consistent visitor orientation and accessibility information. Visitors would be less likely to lose their way or undertake a trail of too great or little challenge.

The number of overlooks at the Presidio would be increased from 6 to 14. New overlooks would be developed in such locations as the Golden Gate Bridge, Battery East and the San Francisco National Cemetery. New overlooks would provide more consistent amenities, and additional vistas from which to observe natural and cultural resources.

Construction activities would introduce construction equipment (and associated noise), work perimeter fencing and signs and closure of construction areas for public safety purposes. Construction activities would detract from the natural setting of the park and somewhat limit access within the Presidio. Development of the new trail alignments would occur gradually in phases, so that construction-related impacts would be localized to specific areas of the Presidio, diminishing any short-term effect on visitors.

Alternative C: Shared Use (Local, Long-Term, Moderate, Beneficial Impact)

Similar to the Mixed Use Alternative, implementation of the Shared Use Alternative would substantially enhance the visitor experience. However, this alternative would provide for an even more comprehensive and interconnected system of trails and bikeways. It would provide better pedestrian and recreational access to major points of interest, place more emphasis on wider, multi-use trails to accommodate large numbers of users, and provide a greater opportunity for group experience. As in the Mixed Use Alternative, trails and bikeways would generally be consistent and continuous. In providing more pedestrian and bicycle loop routes than the Mixed Use Alternative, it would provide fewer opportunities for dispersed visitor experiences, such as enjoying quiet solitude. The alternative would increase the number of trailheads from 9 to 13. The number of overlooks at the Presidio would increase from 6 to 18. As in the Mixed Use Alternative, construction activities would be phased, such that impacts would be localized to specific areas of the Presidio, diminishing any short-term effect on visitor experience.

Alternative	Trailheads	Overlooks
No Action	9	6
Mixed-Use	13	14
Shared Use	13	18
Dispersed Use	25	18

Table 5-2: *Trailheads and Overlooks*

Alternative D: Dispersed Use (Local, Long-Term, Minor, Beneficial Impact)

Similar to the Mixed Use Alternative, implementation of the Dispersed Use Alternative would substantially enhance the visitor experience. However, trail connections would not be as consistent and continuous. The alternative would provide more opportunities for pedestrians to experience solitude and greater physical challenges. Narrower pedestrian linkages and connections and fewer accessible trails and recreational bicycle trails

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would be provided. About half the number of multi-use trails, 17.6 km (10.9 mi), would be developed, as compared to the other action alternatives. No multi-use loop trails would be made available for family and recreational bicyclists. Trailheads would be smaller and would increase from 9 to 25. Some new trailhead parking would be constructed to accommodate people with disabilities. The number of overlooks at the Presidio would increase from 6 to 18 (same as the Mixed Use Alternative). Construction activities would have the same short-term effect on visitor experience as the Mixed Use Alternative.

Impairment

Implementation of the alternatives would not impair National Park resources or values related to visitor use.

VISUAL RESOURCES

Affected Environment

The Presidio is a primary scenic resource of the San Francisco Bay Area. Together with Golden Gate Park to the south, the forested, open-space landscape of the Presidio is a regional landmark, visually prominent within the built environment of urban San Francisco. The Presidio affords a wide variety of distinctive views, ranging from panoramic vistas to narrow views of regional landmarks in the San Francisco Bay Area. Regional landmarks that appear in views from the Presidio include the Pacific Ocean and coastline, the Golden Gate, the Marin Headlands, San Francisco Bay, Alcatraz, Angel Island and the San Francisco skyline. The Presidio trails and bikeways network affords both fixed and dynamic, sequenced views of scenic resources located outside of the Presidio, as well as of scenic resources located within the Presidio itself. In addition, the 6 scenic overlooks, located mostly in the northern and western areas of the park, offer panoramic views. They range from formal paved viewing platforms with vehicle parking to informal widened areas on the sides of trails, to roads with no vehicle parking.

As part of implementing the VMP, the NPS and the Trust are restoring historic viewsheds that include overlooks and other vantage points located throughout the Presidio. These viewsheds include Inspiration Point, Rob Hill, vistas along Lincoln Boulevard and the coastal defense batteries, and the Golden Gate Bridge viewing area. Generally, historic viewsheds are being restored by removing non-native large trees, and planting low-lying native plants so that clear views can be more easily maintained.

Environmental Consequences

Alternative A: No Action (Local, Long-Term, Minor, Beneficial Impact)

Under the No Action Alternative, the current trail and bikeway alignments at the Presidio would be maintained and the existing scenic overlooks would remain in their present condition. Limited closure of certain social trails could occur as part of ongoing maintenance operations. The trail and bikeway system at the Presidio would continue to provide views of regional landmarks and other important scenic resources. The proliferation of social trails would continue to have both beneficial and adverse effects on visual resources. While these social trails provide access to scenic vistas, as landscape features the social trails appear as a haphazard network of compacted dirt pathways that detract from the otherwise scenic surroundings.

Alternative B: Mixed Use (Local, Long-Term, Moderate, Beneficial Impact)

The implementation of the Mixed Use Alternative would provide improved visual access to regional landmarks and other important scenic resources of the San Francisco Bay Area. New pedestrian trails in the vicinity of Golden Gate Bridge Plaza would provide improved scenic viewing opportunities of the Golden Gate. New multi-use

trails in the vicinity of Baker Beach would provide opportunities for scenic views of the Pacific Ocean and the shoreline for both pedestrians and bicyclists.

This alternative would provide improved access to visual resources within the Presidio, including natural features, native habitats, and cultural and historic resources. For example, the proposed Tennessee Hollow Corridor would provide opportunities to view natural and cultural resources located between El Polin Spring and the restored marsh at Crissy Field. The alternative would improve connections between Presidio points of interest, providing new dynamic view sequences, as well as static views, for people traveling along these routes. For example, the Presidio Promenade, which would provide a continuous multi-use trail between the Golden Gate Bridge and the new Greenwich Street Gate, would include views of Battery East, Cavalry Stables, the San Francisco National Cemetery, and the Main Post.

New overlooks would establish additional vantage points from which to observe the abundant scenic resources within the Presidio's various viewsheds, both those outside and within the park. Providing Presidio visitors with new viewpoints that would accommodate both social and solitary enjoyment of the available views, as well as variation in seating arrangements and other improvements, would enhance the use of the Presidio's visual resources. Removal of select trees, if warranted, to enhance viewsheds would constitute noticeable visual change, but would not alter the value of the Presidio as a scenic resource, or substantially alter the visual character of the Presidio forest.

The replacement of the haphazard network of social trails throughout the Presidio with carefully planned and designed pedestrian and multi-use trail corridors would improve resource conditions and enhance views within these corridors.

The increase in the linear miles of trails would expand the visible presence of improvements and somewhat detract from the natural setting. The impact would be moderately detectable, but would not be expected to have an adverse effect on visual resources. Some of the new trails would replace existing social trails. In other cases, pedestrian trails or service roads would be converted to a multi-use trail. In addition, the new trails would be designed and constructed to visually blend with the existing surroundings to the maximum extent feasible. Vista views of the Presidio from Twin Peaks, the Marin Headlands, and Alcatraz would not be affected by new trails, due to the extensive vegetative cover of the Presidio, the low profile of trails, and the placement of the wide multi-use trails along historic and existing road corridors. Trail surface materials could be tinted to blend in with surrounding terrain, and trail borders planted to keep the trail surface out of view from some vantage points.

Construction of the new trails would result in local, short-term, minor adverse impacts to visual resources. Development of the new trail alignments would occur gradually in phases, so construction-related impacts would be local to specific areas of the Presidio as well as temporary, thus lessening the short-term effect on visual resources.

Alternative C: Shared Use (Local, Long-Term, Minor, Adverse Impact)

Similar to the Mixed Use Alternative, the Shared Use Alternative would provide for improved access to vistas of the scenic resources of the San Francisco Bay Area and of the Presidio itself. It would provide improved connections between Presidio points of interest, new overlooks, and the removal of social trails, which would improve resource conditions and scenic views within these corridors. However, under this alternative, access to scenic vistas from the interior of the Presidio would primarily be available via multi-use trails (as compared to a balance of pedestrian and multi-use trails under the Mixed Use Alternative). The

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beneficial effects of this alternative would be somewhat offset by the additional multi-use and pedestrian trails, as well as the conversion of smaller-scale social and pedestrian trails to larger-scale multi-use trails. These trails would expand the area and the visible presence of improvements at the Presidio and detract from the natural setting of the park. Although views of the new multi-use and pedestrian trails would be partially obscured by the park topography and vegetation patterns, the emphasis on wider multi-use trails would be clearly detectable. The wider corridors created by the multi-use trails could also affect views of the Presidio from Twin Peaks and the Marin Headlands. The multi-use trails would likely be somewhat visible from these regional vistas, although views of the trails should be partially obscured by the vegetative cover at the park.

Alternative D: Dispersed Use (Local, Long-Term, Minor, Beneficial Impact)

The Dispersed Use Alternative would have less adverse impact on visual resources compared to the other action alternatives, since this alternative would include the fewest new multi-use trails. As discussed above, these trails would be often visible from roadways, and have a wide cross-section compared to the pedestrian paths.

Impairment

The No Action Alternative would not lead to impairment of the Presidio's visual resources or values. Implementation of the action alternatives would not impair park resources or values related to visual resources. These alternatives would increase opportunities for enjoyment of the park by increasing the number of viewpoints to observe scenic resources.

AIR QUALITY

Affected Environment

The Presidio's location allows for excellent air circulation due to the prevailing west and northwest winds. Because there are no pollution sources west of the Presidio, the air moving into the area is of a very high quality.

Federal, state and local agencies operate a network of monitoring stations throughout California to provide data on ambient concentrations of air pollutants. Recent monitoring data from monitoring stations in San Francisco indicate occasional events in excess of the state standard for PM10 (particulate matter less than 10 microns in diameter). All other criteria air quality standards have not been exceeded in San Francisco over the past five years. Motor vehicles are the major source of air pollution in San Francisco.

Environmental Consequences

Alternative A: No Action (No Impact)

Under the No Action Alternative, there would be no construction-related dust impacts, and Bay Area Air Quality Management District (BAAQMD) recommended control measures for emissions of dust (see below) would not be required.

Alternative B: Mixed Use (Local, Short-Term, Minor, Adverse Impact)

The implementation of the Mixed Use Alternative would not require the installation or operation of new stationary sources of air pollutants. The alternative would not locate sensitive noise receptors close to an existing significant source of air pollution. Consequently, the alternative would not result in a substantial increase in air pollutant emissions.

Construction of approximately 56.2 km (35.1 mi) of new and regraded trails would generate dust (including PM10) primarily from "fugitive" sources. Fugitive sources are those emissions, such as vehicle travel over unpaved surfaces, that are released through means other than through a stack or tailpipe, and lesser amounts of other criteria air pollutants primarily from operation of heavy equipment.[6]

With respect to emissions sources other than fugitive dust, the related emissions are generally included in the emissions inventory that is the basis for regional air quality plans. These would not be expected to impede attainment or maintenance of ozone and carbon monoxide standards in the Bay Area (BAAQMD 2000).

Fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. To reduce construction-generated particulate matter (PM10) emissions, construction contractors would implement as appropriate the BAAQMD's recommended control measures for emissions of dust during construction (see Fugitive Dust Control Measures under Air Quality BMP in Appendix C). Implementation of these measures would result in construction impacts on air quality that would be considered to be insignificant.

Alternative C: Shared Use (Local, Short-Term, Minor, Adverse Impact)

The Shared Use Alternative would generate the smallest amount of dust since the fewest linear miles of trails would be modified – 51.8 km (32.4 mi) compared to 56.2 km (35.1 mi) of trails under the Mixed Use Alternative). As appropriate, construction contractors would implement BAAQMD's recommended control measures for emissions of dust during construction to ensure that there would be a less than significant effect on air quality. Therefore, this alternative would generate the least amount of dust.

Alternative D: Dispersed Use (Local, Short-Term, Minor, Adverse Impact)

The Dispersed Use Alternative would involve slightly more new trail modifications (52.5 km or 32.8 mi) than the Shared Use Alternative. Since BAAQMD recommended control measures would be implemented, air pollutant emissions from construction activities would be considered a less than significant impact.

Impairment

None of the alternatives would impair national park resources or values related to air quality.

NOISE

Affected Environment

The Presidio is located in an urbanized area. Noise levels within the Presidio can fluctuate greatly, largely depending on the proximity to major roadways (e.g., 19th Avenue, Doyle Drive). Away from roadways, the Presidio is generally quieter than the surrounding urban environment of San Francisco because natural noise sources dominate and there is less urban activity. Non-traffic noise is caused by human activity (primarily recreational), occasional aircraft overflights and use of mechanical equipment for building operations (e.g., ventilation systems), landscaping, maintenance activities, building and paving renovation, and tree removal.

Environmental Consequences

Alternative A: No Action (No Impact)

Under the No Action Alternative, there would be no construction-related noise impacts.

Alternative B: Mixed Use (Local, Short-Term, Minor, Adverse Impact)

The Mixed Use Alternative does not propose installation or operation of new stationary noise sources. The alternative would not locate sensitive noise receptors close to an existing significant noise source. However, construction activities associated with 56.2 km (35.1 mi) of trail modifications (including 36.8 km, or 23 mi, of new trails) could result in a temporary increase noise levels within the park vicinity. Construction noise levels are regulated by NPS and the Trust, which are committed to complying with standards

[6]Particulate emissions from construction activities can lead to adverse health effects as well as nuisance concerns such as reduced visibility and soiling of exposed surfaces.

contained within the City's Noise Ordinance during construction. Powered construction equipment other than impact tools would also be required by the Trust and NPS to comply with the San Francisco Noise Ordinance (Article 20 of the City Police Code, Section 2907b), which limits construction noise to 80 decibels at 100 ft. NPS and the Trust, in accordance with the Noise Ordinance (Section 2908) also prohibit construction work at night from 8:00 p.m. until 7:00 a.m. Because the federal agencies would require contractors to comply with all applicable regulations of the San Francisco Noise Ordinance during the construction of trails and bikeways, the alternative would have a minor effect on noise levels.

Alternative C: Shared Use (Local, Short-Term, Minor, Adverse Impact)

Temporary construction-related noise impacts of the Shared Use Alternative would be less than the Mixed Use Alternative, since there would be fewer trails that would be upgraded, 51.8 km (32.4 mi) compared to 56.2 km (35.1 mi). All applicable regulations of the San Francisco Noise Ordinance would be complied with during construction activities. Therefore, a minor effect on noise levels would result.

Alternative D: Dispersed Use (Local, Short-Term, Minor, Adverse Impact)

The Dispersed Use Alternative would increase noise levels less than the Mixed Use Alternative, with 52.5 km (32.8 mi) of new trail modifications proposed. Contractors would comply with all applicable regulations of the San Francisco Noise Ordinance during construction, and therefore construction-related noise impacts would be considered less than significant.

Impairment

None of the alternatives would impair NPS resources or values related to noise.

CUMULATIVE IMPACTS

A cumulative impact[7] is the 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. In general, cumulative effects have been described within the 1994 GMPA Final EIS (for Area A) and the 2002 PTMP Final EIS (for Areas A and B). The analysis below summarizes relevant cumulative actions (see Appendix D) and summarizes their impact in conjunction with the impacts of the alternatives. Because most of the cumulative projects are in the early planning stages, the evaluation of cumulative impacts was based on a general description of the project. Overall, the incremental adverse effects associated with the Trails Plan are expected to be either short-term or negligible and are not expected to result in cumulative effects that are significant. In many instances, the incremental contribution of the Trails Plan to the cumulative effect on the Presidio would be beneficial.

Geology. Neither the proposed action nor the cumulative projects would increase the likelihood or intensity of seismic activity at the Presidio, or the risk of other geologic hazards such as settlement or landsliding. Most seismic and geologic hazards are unpredictable and unavoidable, and would continue to affect visitors and residents at the Presidio regardless of the proposed cumulative actions. Short-term construction impacts, especially those related to soil erosion and topsoil loss, could occur with additional cumulative projects. These cumulative soil erosion impacts would be offset by required compliance with BMPs and project Standard Conditions.

[7]Note: The following discussion applies to all alternatives with the exception of the No Action Alternative.

Hydrologic Resources. Construction of a Doyle Drive tunnel could result in a change to the hydrologic regime and loss and/or alteration of the localized wetland features and processes, vegetation richness and associated wetland habitat values. The tunnel could also affect establishment of a healthy functioning wetland system between the freshwater inflow of Tennessee Hollow and Crissy Marsh. Removal of the majority of social trails, followed by habitat restoration as called for in the VMP and the proposed project, would protect wetlands from negative human intrusions and likely have a beneficial impact on hydrologic features. Cleanup of the Presidio's numerous environmental remediation sites under the Presidio Environmental Remediation Program would occur within or directly adjacent to hydrologic resources, and could result in either the short-term or long-term redirection of surface and groundwater flow within these areas. However, it is anticipated that the program's long-term beneficial impacts to hydrologic resources and water quality would exceed the short-term impacts by their coordination of subsequent habitat restoration efforts with implementation of the PTMP, the GMPA and the VMP. Appropriate management practices or mitigation measures for subsequent programs would be identified to provide both short-term and long-term protection and enhancement of hydrologic resources. Finally, the proposed Mountain Lake Enhancement Plan would benefit hydrologic resources and water quality values through restoration and management activities. This beneficial effect would contribute cumulatively to the presence of valuable water resources within the Presidio.

Biological Resources. Cumulative projects that would have both adverse and beneficial effects on biological resources include the Trails Plan, the Presidio Environmental Remediation Program, the VMP and the PTMP. Construction and recreation activities associated with these projects may result in trampling or removal of individual plants, soil compaction, erosion, and effects that may influence the presence of invasive species. Moderate levels of ground disturbing activities may reduce competition from more abundant or invasive species. Erosion may result in burial of seed or individual plants, thus reducing the genetic variability of the population. Beneficial effects include expanded habitat area, increased public education, restricted pedestrian access to sensitive vegetation, and fencing. These adverse and beneficial effects are discussed for the individual projects contributing to cumulative impacts below.

In addition to habitat restoration, the Trails Plan would benefit native plant communities, including federally listed plants, protected wetlands and wildlife, by managing human access and redirecting access away from sensitive habitat areas. The establishment of and the extent of effects within social trails would be reduced within areas supporting federally listed species or within recovery areas. Existing trails would be surfaced and/or widened, and new trails would be constructed in the dunes near Baker Beach housing, Inspiration Point, Lobos Creek Valley, western coastal bluffs and the Tennessee Hollow Creek corridor. All trail planning would be coordinated with future restoration implementation efforts, and final alignments would be selected based upon avoidance of optimum habitat for the establishment of listed species. Minimization and compensatory measures included in the Final Biological Opinion and BMPs included in the Trails Plan would be incorporated into the project to minimize effects to biological resources.

Generally speaking, projects proposed under the Presidio Environmental Remediation Program would provide beneficial effects to biological resources. The cleanup sites are not currently composed of native soils capable of supporting native plant communities and listed species, but appropriate soil conditions to support native plant communities would be restored, as feasible,

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following cleanup actions. Although the construction activities may result in short-term loss to adjacent habitat affected by construction, there is no permanent loss anticipated. Through implementation of the remediation projects, approximately 6 h (15 ac) of federally listed plant habitat would be restored at sites that currently do not provide suitable habitat for these species.

The PTMP would benefit native plant communities, including wildlife habitat and habitat for listed species, primarily through the removal of existing buildings and infrastructure built on habitat in the southern portion of the park. Replacement construction would not occur within habitat for listed species. Native plant habitat would be expanded from the existing 28 h (70 ac), to about 84.8 h (212 ac). Construction activities associated with PTMP implementation have the potential to have a short-term effect on a maximum of three acres of existing lessingia habitat; however, no permanent loss of existing habitat would occur.

Projects implementing the VMP would protect, enhance, restore and rehabilitate the native and planted vegetation of the Presidio. Guidance provided by the VMP would reduce the potential for adverse effects to biological resources and establish a framework for a coordinated management effort in rehabilitating and restoring native plant communities, historic forests, and landscaped areas of the Presidio. The VMP designates the southwest corner of the Presidio as a Special Management Zone to further focus on the specific conditions in this area, including recovery tasks for restoration and management for the lessingia. Specific plans for forested areas within this zone would be prepared in consultation with the USFWS to ensure the conservation of lessingia in the long-term.

Other cumulative projects in the Presidio, specifically the Letterman Digital Arts Center and the Presidio Water Recycling Project, would have negligible impacts on biological resources. The Doyle Drive project would occur in areas that are already developed and have relatively few biological resources. These projects are therefore not expected to contribute measurably to cumulative effects on biological resources. The Tennessee Hollow Restoration and Crissy Marsh Expansion would result in a net benefit to plants and wildlife.

Cultural Resources. The analyses of potential cultural resource impacts associated with cumulative projects address the potential for NPS and Trust actions to result in an adverse effect on individual historic resources, the Presidio cultural landscape, and on the overall significance of the NHLD, which encompasses both Areas A and B. Potential cumulative impacts associated with the rehabilitation of currently vacant historic buildings, replacement of non-historic buildings with compatible new construction, rehabilitation of cultural and natural landscapes, water conservation, improvements to traffic safety and efficiency, and enhancements to the visitor facilities and programs, would be beneficial. For historic buildings to be rehabilitated, either a compatible new use or the use for which the building was originally designed would be selected so as not to materially alter the building's defining characteristics. Some historic buildings may have to be altered to accommodate new uses. In these instances, the standards for rehabilitation contained in The Secretary of the Interior's Standards for the Treatment of Historic Properties (NPS 1992) would set the minimum standards for proposed changes. Under Section 110 of the NHPA, all federal agencies must carry out their programs in accordance with national historic preservation policy, and make efforts to minimize harm to National Historic Landmarks. Furthermore, Section 110(f) of the NHPA charges federal agencies to afford some special protection to National Historic Landmarks. Specifically, it requires that the agency "to the maximum extent possible, undertake such planning and actions as may be necessary to

minimize harm" to a National Historic Landmark that may be directly and adversely affected by an undertaking. Section 106 of the NHPA requires federal agencies to take into account the effects of their actions on historic properties and seek comments from an independent reviewing agency, the Advisory Council on Historic Preservation. Adherence to the Section 106 process through the NPS and Trust Programmatic Agreements, which provide the frameworks for the necessary consultation process for proposed undertakings, would avoid unnecessary harm to historic properties.

Impacts associated with new construction activities would be considered less than significant, due to:

- Limits set on the level of new construction
- Commitments to additional planning, environmental analysis, and public input for a proposed undertaking
- NPS and the Trust's policies to preserve the integrity of the NHLD, and to follow planning, design and building-specific guidelines
- The requirement for further consultation under Section 106 and the PAs

The Doyle Drive project could have the potential to remove multiple historic buildings affecting the integrity of the NHLD. For example, if most of the World War I warehouses are demolished, the ability to interpret the history of the NHLD would be affected. Removal of Battery Slaughter and Battery Blaney would also affect the integrity of the NHLD.

The cumulative context for archaeological resources includes projects within the Presidio that could disturb or destroy archaeological resources during excavation or grading. Such projects include the Doyle Drive Project, the Mountain Lake Enhancement Plan, the Trails Plan, and the Letterman Digital Arts Center project. The Tennessee Hollow project and any proposed expansion of Crissy Marsh cannot be evaluated until specific restoration/expansion alternatives are identified. Cumulative impacts on known prehistoric archaeological sites or historic archaeological resources are, in general, not expected to be adverse. Possible exceptions include prehistoric and historic sites along Crissy Field, which could be subjected to impacts from the Doyle Drive Project and any expansion of Crissy Marsh. In particular, for the Doyle Drive Project, any below-ground or tunnel features pose the greatest threat to buried prehistoric and historic archaeological sites. The Federal Highway Administration and Caltrans would be conducting further investigations to identify specific archaeological site boundaries and impacts to archaeological sites. The Crissy Marsh Study itself would have no cumulative effect on archaeological resources because it would not develop alternatives, but would provide a technical basis to inform a later environmental review process. As such, it would be speculative to predict specific impacts on archaeological resources from marsh expansion or Tennessee Hollow restoration until specific alternatives are identified. The Mountain Lake Enhancement Plan is an ongoing project for which an archaeological management assessment would be prepared prior to implementation. The lake and its original shoreline have the potential for prehistoric archaeological sites and for remains of the 1776 Anza Spanish encampment. An archaeological field survey and testing program would be conducted and the project would be redesigned if necessary to avoid impacts to significant archaeological sites. No cumulative impacts on archaeological resources are expected from the Trails Plan because the plan calls for the redesign of routes and facilities to avoid all such effects. The 9.2 h (23 ac) Letterman Digital Arts Center project is also not expected to contribute to cumulative archaeological impacts, because no evidence of buried archaeological sites was found

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during a recent investigation. Archaeological monitoring would take place during the demolition and new construction phases, and the process defined in the Programmatic Agreement for the Letterman project would be adhered to.

Because implementation actions under the PTMP and the above projects would involve site investigations prior to excavation and monitoring for archaeological resources as needed during excavation, the likelihood that archaeological resources would be destroyed or damaged without appropriate attention to recordation and recovery would be minimized. Therefore, cumulative impacts are not expected to be significant.

Traffic Safety. A number of cumulative projects would have a beneficial effect on traffic safety in the Presidio's trail corridors. These projects include the Crissy Field Project, the Presidio Internal Shuttle, and the Golden Gate Bridge Toll Plaza Redesign. These projects, individually and in combination, would reduce congestion by encouraging travel to the park by alternative forms of transportation (e.g., nonprivate vehicles). For example, the promenade at Crissy Field is an important connection between San Francisco and the Golden Gate Bridge, while a second set of pathways adjacent to Mason Street provides alternate routes through the area for bicycles and pedestrians, separated from automobile traffic. The Presidio Internal Shuttle provides reliable, frequent alternative transportation for residents, tenants, and visitors to the Presidio, and facilitates access within the park, and to and from the park, by connections with public transit.

Implementation of the PTMP would result in a substantial increase (about 200 percent) in pedestrian and bicycle activity within the Presidio (between 14 to 18 percent of all trips generated by the PTMP land uses are anticipated to occur by walking and bicycling as the primary mode). The cumulative pedestrian and bicycle activity would be generally accommodated within the existing pedestrian and bicycle network, plus proposed improvements outlined in the Trails Plan.

Reasonably foreseeable projects that could have a short-term, adverse effect on traffic safety include the Golden Gate Bridge District Seismic Retrofit, Phase II; the Doyle Drive Environmental and Design Study; and the Letterman Digital Arts Center project. The adverse effects associated with these projects would be short term in nature, primarily related to construction-generated traffic on existing roads and trails and possible use of trail staging areas. Construction activities would be geographically dispersed, and would occur intermittently. Cumulative effects would be minimized through preparation and implementation of construction traffic management plans, which would provide specific truck routes and other measures, to ensure that individual projects are coordinated. These projects would not result in any net, long-term effects on traffic safety within the Presidio. The short-term, construction-related traffic impacts that could result from development of site-specific cumulative projects would not appreciably alter these long-term, beneficial impacts.

Visitor Use. Cumulative projects would have a beneficial cumulative effect on visitor experience due to an increased array of visitor facilities including increased regional trail connectivity, an enhanced Presidio-wide interpretive program, new public gathering spaces, increases in open space, and improvements to the Golden Gate Promenade. The Crissy Field Plan has already had a beneficial effect on the educational and interpretative (as well as recreational) opportunities for visitors. Such planning efforts as the Trails Plan, Bay Area Ridge Trail, San Francisco Bay Trail, San Francisco Bicycle Plan, and Metropolitan Transportation Commission Regional Bicycle Plan would collectively promote regional trail connectivity by linking the Presidio to recreation corridors in San Francisco and the Bay Area through a robust network of pedestrian and

bicycle-friendly facilities. The NPS and Trust are embarking on a park-wide interpretive program that would enhance visitor experience and identify locations, such as trails, where interpretive programs could be presented. In addition, expanded facilities and programming under the PTMP would complement the visitor experience offered by the NPS' Presidio operations, the rest of the GGNRA and other regional visitor resources. As discussed in the PTMP EIS, the Trust would implement measures to ensure that future visitation does not adversely impact the Presidio's resources or the public's enjoyment of the park.

Visual Resources. Removal and revegetation of the majority of undesignated trails, as called for in the Presidio Trails and Bikeways Master Plan, would have a beneficial effect on the visual quality in the park as the areas are returned to a natural state. Other cumulative projects that would have a net local, long-term, beneficial cumulative effect on scenic resources include those that would improve the general health of ecosystems visible from or within the Presidio, including the Crissy Field Project, the VMP, the Mountain Lake Enhancement Plan and the Tennessee Hollow Riparian Corridor Enhancement Project. Implementation of the Crissy Field Project has transformed 100 acres of asphalt surrounded by chain link fence to a restored dune and tidal marsh system, with greatly enhanced naturalistic scenic resource values. The VMP would rehabilitate and restore native plant, historic forest, and landscaped areas of the Presidio. In particular, the VMP would restore historic viewsheds that include overlooks and other vantage points located throughout the Presidio by removing nonnative vegetation, and planting low-lying native plants so that native communities can become reestablished and clear views within historic viewsheds can be more easily maintained. Actions in the Mountain Lake Enhancement Plan would also enhance native vegetation, but would not substantially alter the visual environment in the Presidio.

Changes within the 9.2 h (23 ac) Letterman Digital Arts Center site include replacement of the existing 10-story former hospital, which has improved views within the Presidio. Construction of improvements to Doyle Drive would generally improve views by placing portions of the roadway at or below ground level. Finally, the PTMP would protect and enhance natural and cultural resources, and increase the quality and quantity of open space at the Presidio, which would have a local, long-term, beneficial impact on visual resources. The PTMP would reduce the existing overall building square footage with some compatible new construction balanced with building removal. New built features would be required to conform with planning district guidelines intended to protect visual resources. Short-term construction related activities and new built features associated with implementation of the PTMP could temporarily affect visual resources. However, these impacts would be incremental and localized.

Air Quality. Construction activities related to the cumulative projects could contribute cumulatively to dust and other emissions, which would have minor, temporary effects on air quality within the Air Basin. The Bay Area Air Quality Management District requires implementation of various control actions to minimize these effects, and the cumulative projects' contribution to basin-wide construction emissions would be very small.

Noise. Noise is a localized issue limited to the geographic area adjacent to or in the vicinity of a project or activity. Noise can be short term, during construction, or ongoing, as with noise from a highway. Short-term cumulative impacts could be related to concurrent Presidio construction projects and the reconstruction of Doyle Drive. All new development would be subject to the limitations of the San Francisco Noise Ordinance. Over the long term, cumulative actions within the Presidio would coincide with anticipated region-wide growth in traffic noise, especially from traffic

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on U.S. Highway 101 and U.S. Highway 1. Noise from other sources and activities within the Presidio would add to this effect. These cumulative effects were analyzed in both the GMPA and PTMP EISs, and were found to be minor. Should Doyle Drive involve construction of a tunnel, this would have a cumulative beneficial long-term noise impact on the Presidio.

IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS

Floodplains

Executive Order 11988 requires that all federal agencies conduct an analysis of their proposed action on floodplains. Pursuant to this Order, floodplains are defined by the Federal Emergency Management Agency as the 100-year floodplain. The Presidio of San Francisco is located entirely outside of the designated 100-year floodplain, and therefore this topic is not addressed further.

Environmental Justice

Executive Order 12898 requires that all federal agencies evaluate the impact of proposed actions on minority and low-income populations. This Order is specifically designed to prevent disproportionate environmental impact of federal actions on these groups. Implementing the Trails Plan would not have an adverse impact on surrounding populations, and these populations are not considered minority or low-income.

Brenda Tharp

6 Consultation and References

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Interagency Review

The NPS and Trust prepared the Trails Plan/EA concurrently with other applicable environmental reviews or consultation as required under Section 7 of the Endangered Species Act of 1973 (16 USC 1536), Section 307 of the Coastal Zone Management Act of 1972 (16 USC 1456) and the implementing Federal Regulations in 15 CFR Part 930, and Section 106 of the National Historic Preservation Act of 1966 (16 USC 470f). To comply with these requirements, the NPS and Trust actively solicited the participation of the U.S. Fish and Wildlife Service, the San Francisco Bay Conservation and Development Commission, the Advisory Council on Historic Preservation, and the California State Historic Preservation Officer. The views of these agencies, which have been integrated into the Trails Plan/EA, are discussed below. Copies of all relevant correspondence are available for review as part of the formal public record.

U.S. Fish and Wildlife Service

On November 25, 2001, the Trust and the NPS requested formal consultation with the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the Endangered Species Act of 1973, concerning the Trails Plan. Prior to initiation of formal consultation, NPS and Trust representatives met and toured the Presidio with the USFWS on November 6, 2000 to discuss and orient the parties to the Trails Plan. The Trust and NPS again met with USFWS staff on May 17, 2002 to preliminarily discuss effects of the proposed plan. In the time between the initial meeting and request for formal consultation, the Trust and NPS corresponded verbally and in writing with the USFWS to review and discuss the proposed plan and consultation requirements. On July 23, 2002, the USFWS issued its Biological Opinion on the effects of the Trails Plan/EA on the endangered Raven's manzanita, San Francisco lessingia, Presidio clarkia, and the threatened Marin dwarf flax. After reviewing the current status of these plants, the environmental baseline for the action area, the effects of the plan and the cumulative effects, the biological opinion concluded that the Trails Plan, as proposed, will not jeopardize the continued existence of these species or adversely affect critical habitat of these species. The Biological Opinion also noted that, "in addition to habitat restoration, the Trails Plan will benefit native plant communities, including federally listed plants, and wildlife by managing human access and redirecting access away from sensitive habitat areas." Since issuance of the Biological Opinion by USFWS, the NPS and Trust have apprised the USFWS of several changes to the Preferred Alternative in response to public comments, which have resulted in a long-term beneficial effect (i.e., a net gain of 86.6 sm [932 sf] of proposed future habitat for the San Francisco lessingia). Due to the beneficial nature of these changes, it was determined that no further formal consultation was required.

San Francisco Bay Conservation and Development Commission

As the coastal management agency for the San Pursuant to the Coastal Zone Management Act of 1972, the San Francisco Bay Conservation and Development Commission (BCDC) is required to review Federal projects which could affect the coastal zone and determine whether the project is consistent with the BCDC's Amended Coastal Zone Management Program for San Francisco Bay. On November 15, 2002, the NPS and Trust submitted a description of the Trails Plan/EA and requested that the Commission concur that the plan is consistent with the BCDC's Amended Coastal Zone Management Program for the San Francisco Bay segment of the California coastal zone. Based on the information contained in those materials, on February 20, 2003, the BCDC considered and found that the Trails Plan is

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consistent with the provisions of the McAteer-Petris Act and the policies of the San Francisco Bay Plan. The BCDC's Letter of Concurrence included the following statements:

…[I]mplementation of the plan would involve the placement of small amounts of materials and the substantial change in use of areas such that the placement, extraction, or change in use would not have a significant adverse effect on present or possible future maximum feasible public access to the Bay consistent with the project, on present or possible future use for a designated priority water-related use, and on the environment, as defined in Commission Regulation Section 10601(b)(1) and thus is equivalent to a "minor repair and improvement." In addition, San Francisco Bay Plan Map No. 4 identifies the Presidio as a park priority use area and contains a policy that states "[i]f and when not needed by Army, retain at least shoreline and undeveloped areas as regional park." (Recreation Policy 5(a) and Bay Plan Map No. 4, Policy No. 24). The implementation of the Trails Plan would be consistent with the Bay Plan Map notes by encouraging recreational use of the Presidio.

Advisory Council on Historic Preservation/ California State Historic Preservation Officer

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires the NPS and the Trust to take into account the effect of their undertakings on historic and cultural resources, including the National Historic Landmark District (NHLD). The NPS and the Trust each entered into programmatic agreements (PA) with the ACHP and the SHPO that apply to all undertakings under their jurisdictions. The PAs provide a framework for reviewing the project effects internally and for consulting with other parties under certain circumstances.

NPS and Trust staff reviewed the Trails Plan/EA and determined that the proposed undertaking will not have an adverse effect on historic properties that contribute to the significance of the NHLD, because all work will be in keeping with the Secretary of Interior's Standards for the Rehabilitation of Cultural Landscapes and Historic Properties and will conform to the Standards, Principles and Planning District Guidelines of the Presidio Trust Management Plan to the maximum extent possible. The NPS and the Trust are committed to conducting additional NHPA review within their separate jurisdictions as necessary at the time individual trail segments are designed and proposed for funding. On February 24, 2003, the NPS and the Trust submitted the Trails Plan/EA to the ACHP and SHPO with a request for concurrence with this determination. The NPS and Trust supplemented this information with the record of public commentary during the public review period. On March 18, 2003, the Trust and NPS held a telephone conference with the SHPO (ACHP could not be present). Based on review of the information, SHPO staff (and later, ACHP staff) concurred with the NPS and Trust finding that there will be no adverse effect to historic properties caused by this undertaking. In a follow-up letter memorializing the course of the consultation, the SHPO thanked the NPS and Trust staff for "preparing an informative and responsive consultation package for this undertaking and for committing your agencies to carrying out all measures needed to secure the validity of the 'no adverse effect' finding when individual actions are implemented in accordance with the final Trails and Bikeways Plan."

List of Persons and Agencies Consulted

Valary Bloom, Coast-Bay-Delta Branch, Endangered Species Program, U.S. Fish and Wildlife Service

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Harvey Katz, Senior Planner, Golden Gate Bridge, Highway and Transportation District

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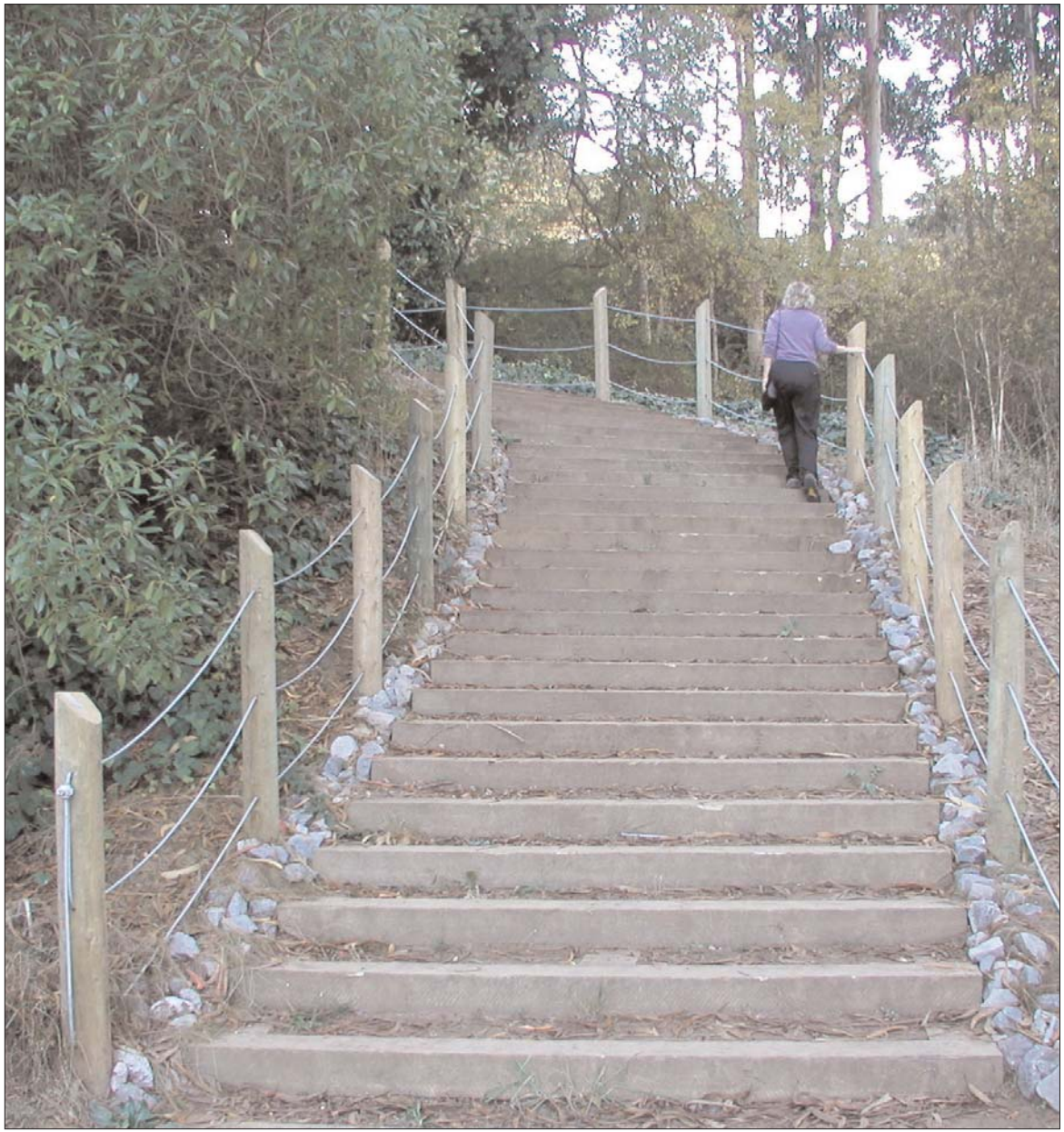

7 Appendices

A. Finding of No Significant Impact

B. Response to Comments

C. Best Management Practices

D. Cumulative Project List

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APPENDIX A. FINDING OF NO SIGNIFICANT IMPACT - PRESIDIO TRAILS AND BIKEWAYS MASTER PLAN AND ENVIRONMENTAL ASSESSMENT

Purpose

This Finding of No Significant Impact (FONSI) provides the basis for the National Park Service's (NPS) and the Presidio Trust's (Trust) determination that the Selected Action (Alternative B or the Preferred Alternative as modified in response to public comments), as analyzed in the integrated Presidio Trails and Bikeways Master Plan and Environmental Assessment (Trails Plan/EA or plan), will not have a significant effect on the human environment and does not require the preparation of an Environmental Impact Statement. A complete description of the Selected Action and its environmental consequences are contained in the Trails Plan/EA, which is attached and incorporated by reference into this FONSI.

The Trails Plan/EA was developed to provide park visitors and Presidio residents and tenants with a comprehensive and enjoyable trails and bikeways system, while protecting and enhancing the Presidio's natural and cultural resources. A coherent network of trails is needed to enhance connections among key features of the Presidio, and to create an organized, accessible, safe and managed means for the public to explore and experience the Presidio's open spaces. The Trails Plan/EA will guide management and stewardship of the Presidio trails and bikeways network for the next 20 years. The Trails Plan/EA is a joint effort of NPS and the Trust, the two agencies responsible for management of the Presidio, and many members of the community who have played a role in the planning process. The Trails Plan/EA has been republished in its entirety to include changes made in response to public comments received on the November 2002 document.

Selected Action

The Trails Plan/EA analyzed four alternatives that differed primarily in the mix of different trail types, and the different types of visitor experiences each mix will create:

- Alternative A, the No Action Alternative, maintains the Presidio's current trails and bikeways network and assumes that no comprehensive changes or major new trail construction will take place.
- Alternative B, the Mixed Use Alternative (Preferred Alternative in the Trails Plan/EA), provides the widest range of educational and recreational opportunities for the broadest range of park users. This alternative offers a mix of urban and natural visitor experiences to emphasize both traditional uses of the Presidio and the park's unique location in a large metropolitan area.
- Alternative C, the Shared Use Alternative, provides the greatest number of multi-use trails that access major points of interest in the Presidio. This alternative accommodates large numbers of park users but with fewer opportunities for solitude.
- Alternative D, the Dispersed Use Alternative, focuses on single use trails, and provides fewer opportunities for accessible trails and off-street recreational cycling.

NPS and Trust developed the alternatives based on the plan's purpose and need, issues raised in scoping and other public comment. The Trails Plan/EA disclosed the potential environmental consequences that may result from implementation of each alternative. Based on the assessment of potential effects, consideration of public and agency comment, and the entire administrative record, the modified Alternative B is designated as the NPS' and the Trust's Selected Action. This alternative includes the following:

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Trails and Bikeways

Implementation of the Selected Action will include both improvements to existing trails and bikeways and the development of new trail and bikeway corridors at the Presidio. Three basic trail types will be provided: pedestrian trails, multi-use trails and bikeways. Pedestrian trails will be separated from bike and auto traffic, offering users the opportunity to experience the Presidio without distractions from other types of trail users. Multi-use trails will offer safe, enjoyable opportunities for pedestrians, slower-speed recreational or family bicyclists, and other wheeled sports users to travel through the Presidio. Several different types of bikeways will be included, depending on the intended bicycle user, roadway constraints and vehicle traffic volumes. Safety upgrades will be made on trails and bikeways throughout the Presidio and at intersections and roadway crossings. Connections to city and regional bike routes will be improved. Specific trails and bikeways improvements will include:

- **Coastal Trail.** Improvements will be made to an existing 3-mile trail and bike route traversing the coastal bluffs.
- **Batteries and Bluffs Corridor.** A new trail corridor will provide safe access to historic gun batteries and the shore, replacing "social" trails that are causing severe erosion.
- **Bay Area Ridge Trail.** Improvements will be made to an existing 2.5-mile multi-use segment of the Bay Area Ridge Trail, connecting the Arguello Gate to the Golden Gate Bridge.
- **Baker Beach and Lobos Creek Valley Loop.** New and existing trail corridors will provide a 2-mile loop, including the Lobos Creek Valley boardwalk, remnant native sand dunes and Baker Beach.
- **Park Boulevard.** A major new north-south connector will travel from Mountain Lake, through the Presidio Golf Course, over forested Presidio ridgetops, and through the historic Cavalry Stables to Crissy Field.
- **Ecology Trail.** Improved accessibility will be provided along the existing 2-mile loop trail from the top of the Main Post to Inspiration Point, with its serpentine grassland and dramatic overlook.
- **West Pacific/Mountain Lake Corridor.** Improvements to existing trails will create a mixed-use corridor paralleling the Presidio's southern boundary, connecting the Broadway Gate, Julius Kahn Playground, the Presidio Golf Course, Mountain Lake, and the Lobos Creek Valley.
- **Tennessee Hollow Corridor.** A new trail through the restored Tennessee Hollow stream corridor will connect Julius Kahn Playground to Crissy Field.
- **Lover's Lane.** One of the oldest foot trails in the Presidio, Lover's Lane will be revitalized to improve pedestrian access and create a new parallel bikeway on Presidio Boulevard.
- **Presidio Promenade.** Improvements to the Lincoln Boulevard corridor will create a new continuous trail from the east edge of the Presidio, through the historic Main Post, to the Golden Gate Bridge and the Coastal Trail.
- **Golden Gate Promenade.** Improvements will be made at the west end of the existing 4-mile trail providing access to Crissy Field, Fort Point and the Golden Gate Bridge. This trail is part of the regional San Francisco Bay Trail.

Trailheads and Scenic Overlooks

A comprehensive system of new and improved scenic overlooks will be included in the Selected Action. Scenic overlooks will be strategically sited to take advantage of the Presidio's spectacular views. Trailheads will improve connections between trail corridors and bikeways, roadways, parking and major points of interest in the park.

Resource Protection

New trails and bikeways will help visitors enjoy the Presidio and prevent damage to sensitive habitats and irreplaceable cultural resources. Networks of undesignated social trails will be replaced with new sustainable trails, reducing impacts and improving visitor mobility. Interpretive trails will introduce users to the Presidio's rich history and ecology.

Rationale for Not Selecting Other Alternatives

The other alternatives were not chosen as the Selected Action for the following reasons:

- Alternative A, the No Action Alternative, provided few beneficial effects or improvements and would not correct existing trail network deficiencies. This alternative would avoid construction effects, but would not attain the widest range of beneficial uses identified in Chapter 5 of the Trails Plan/EA and would not enhance visitor use and experience.
- Alternative C, the Shared Use Alternative, has the highest potential to degrade the Presidio's environmental resources. Although this alternative would actively promote bicycles as a transportation alternative and, therefore, best contribute to a comprehensive transportation strategy, it would also require the most significant modifications to road corridors by adding the most linear miles of multi-use trails. Thus, the balance between resource protection and the promotion of bicycle transportation was considered less favorable in this than the Selected Action.
- Alternative D, the Dispersed Alternative, was rejected because it failed to provide as cohesive and comprehensive a trail system as the other alternatives. Although it would provide the greatest variety of experience and physical challenge for pedestrians, this alternative would not provide for consistent and continuous trail connections for multiple user groups and therefore would not encourage a reduction in automobile use to, from and within the Presidio.

Modifications to the Preferred Alternative

In responding to specific suggestions from the public comments, the NPS and Trust made several changes to the Trails Plan/EA, including modifications to the Preferred Alternative as evaluated in the Trails Plan/EA. These changes are summarized below and explained further within the responses to comments included in Appendix B of the republished Trails Plan/EA. None of the modifications to the Preferred Alternative raise any environmental concerns or impacts that have not been previously examined in Chapter 5 of the November 2002 Trails Plan/EA.

User Conflicts

In response to requests for greater separation of pedestrians and bicyclists, the number of multi-use trails decreased slightly, and in some cases the locations were modified. For example, the trail immediately adjacent to West Pacific Avenue is now proposed as a pedestrian trail, and the parallel trail through the Pacific Grove and below Julius Kahn Playground is proposed as a multi-use connection. The change is intended to reduce the potential for conflicts between bicyclists on the multi-use trail and users of the playground.

Pedestrian Access

In response to suggestions to provide more pedestrian-only trail experiences and to retain more of the existing social trails, the Trails Plan/EA clarifies that the majority of social trails will be retained, in most cases as secondary pedestrian trails, except where the trails would have an adverse effect on overriding resource values. To this end, the Preferred Alternative now converts more social trails to designated trails, including the trail leading from Battery Marcus Miller to North Baker Beach, and a connection

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

from the Washington Boulevard overlook to Lincoln Avenue. In addition, in response to comments requesting smaller, narrower multi-use trails, the width of multi-use trails within the Preferred Alternative could be reduced from between 8 feet (2.4 meters) and 10 feet (3.0 meters) to 6 feet (1.8 meters) to permit a more intimate visitor experience where appropriate.

Off-Road Mountain Biking

In response to comments supporting off-road mountain biking, the Trails Plan/EA clarifies that access for off-road mountain biking is provided through the multi-use trails within the park. In addition, a new multi-use trail has been included, connecting the Broadway Gate via Pacific Grove to Arguello Boulevard and the Bay Area Ridge Trail. As several commentors indicated, this trail provides an off-road connection through the Presidio from the southeast corner of the park to the Golden Gate Bridge. The trail can also be used with other multi-use trails and bike lanes to create loops throughout the park. Due to potential unacceptable impacts on park resources and values, an unpaved, single-track mountain bike experience is not being considered as requested.

Dog Walking and Off-Leash Recreation

In response to commentors' suggestions, the Trails Plan/EA now acknowledges that on-leash dog walking is a popular form of pedestrian use of trails in the park, and clarifies that Presidio visitors with dogs on leash are allowed on all pedestrian and multi-use paths. The Trails Plan/EA also refers to the ongoing rulemaking process to develop an alternative pet management regulation for off-leash dog walking within the Presidio and the GGNRA as a whole. No decision regarding off-leash dog walking within the park will be made until the rulemaking process is completed.

Signage

In response to commentors' requests to improve signage, the Trails Plan/EA now provides specific information that may be included on trailhead signs and guides. Clear and concise roadway and trail signage will identify trails and bikeways, guide users to their destinations, and inform motorists of the presence of bicyclists and pedestrians. The number and type of signs will not, however, be so pervasive as to create "sign clutter" and detract from the park setting. The Presidio Trust and NPS will continue to incorporate traffic calming into plans for roadway and intersection improvements within their separate jurisdictions.

Specific Trail Modifications

The following changes (shown in Figure 1) have been made to the Preferred Alternative to incorporate suggestions offered during public comment:

- **Coastal Trail.** A pedestrian connection from Battery Crosby, across to the sand ladder, then down and across Baker Beach has been added. This will create a pedestrian corridor connecting the Golden Gate Bridge to the 25th Avenue Gate. The multi-use trail adjacent to Lincoln Boulevard and bike lanes on both sides of Lincoln Boulevard has been retained.
- **Bay Area Ridge Trail.** The Bay Area Ridge Trail now crosses Washington Boulevard farther to the west, and includes a new multi-use segment adjacent to Washington Boulevard, connecting to Nauman Road and Amatory Loop. A new pedestrian crossing at Park Boulevard, as well as a new trail connection in the forest from Park Boulevard to Battery McKinnon-Stotsenberg is also being provided. The Bay Area Ridge Trail segment through the Rob Hill Campground will now continue as a multi-use trail, and a new pedestrian spur has been added from north of Building 1347 to the east of Building 1202 in Fort Scott. The trail alignment has been changed to connect the Harrison Boulevard/Kobbe Avenue intersection to Ralston Avenue, rather than using Greenough

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

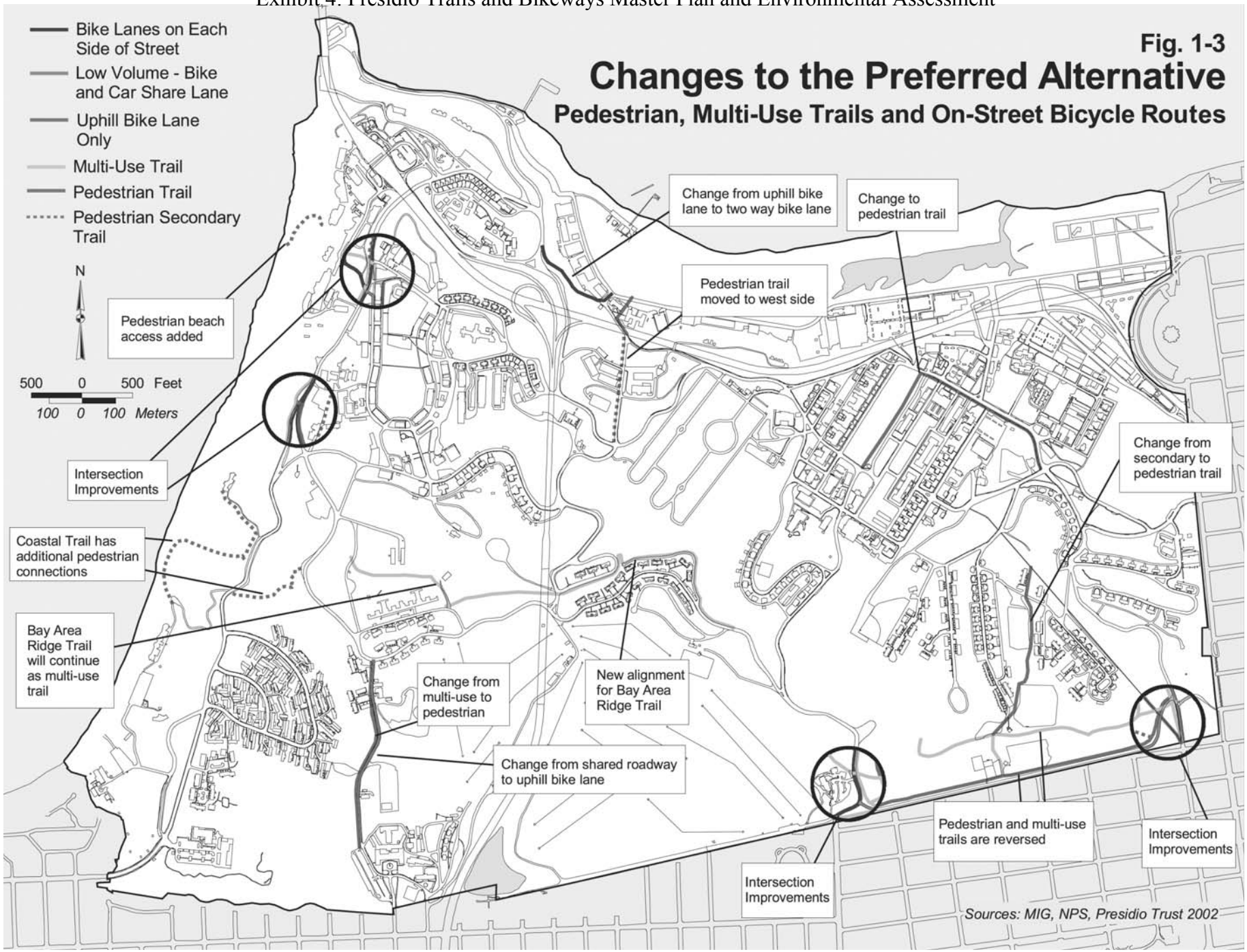

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Avenue, skirting Building 1340. The Kobbe Avenue/Merchant Road intersection will also be improved.

- **Park Boulevard Trail.** The Park Boulevard/ Washington Boulevard intersection has been modified to create a better crossing. The sidewalk is now proposed on the west side of McDowell Avenue rather than the east side, and a new pedestrian connection to Crissy Field between Stilwell Hall and Building 649 has been added.
- **Ecology Trail.** The connection from Quarry Road onto Arguello Boulevard has been improved for both wheelchair users traveling to Inspiration Point, and for users who wish to cross to the Presidio Golf Course.
- **West Pacific/Mountain Lake Corridor.** Both a pedestrian and a multi-use corridor will be provided in this heavy use location to reduce user conflicts. The locations of the multi-use trail and the pedestrian trail through Pacific Grove and Julius Kahn Playground have been changed so that the pedestrian trail will be adjacent to the road and the multi-use trail will cut through the grove north of the playground.
- **Tennessee Hollow Trail.** A pedestrian trail will be located within the eastern tributary as part of the Tennessee Hollow trail corridor.
- **Lover's Lane.** The intersection of Lover's Lane and West Pacific Avenue will be modified to improve the spur to the Broadway Gate.
- **Presidio Promenade.** A consistent sidewalk route and bike lanes will be provided within this corridor, but not a continuous multi-use trail. The bike lanes will separate near the Cavalry Stables, using Patten Road for the westbound bike lane, and Lincoln Boulevard for the eastbound bike lane. Crissy Field Avenue will serve as a two-way multi-use path with no automobile traffic, subject to further Trust review and approval.
- **Wedemeyer Street/Battery Caulfield Road.** The connection from the 15th Avenue Gate to Washington Boulevard will include both an uphill bicycle lane and a pedestrian path (sidewalk) rather than a multi-use path to reduce user conflicts.

Environmentally Preferable Alternative

The environmentally preferable alternative is the alternative that best promotes NEPA's goals. Although each alternative does so with a different balance among values, all of the Action Alternatives would enhance visitor use and experience, support resource management, contribute to a comprehensive transportation strategy, encourage sustainable design and construction, and promote stewardship. The Selected Action is, however, the environmentally preferable alternative because it best enhances visitor use and experience by providing diverse recreational and educational experiences, minimizing user conflicts, improving connections to regional trails, and ensuring access to the Presidio's outstanding natural and cultural resources. The Selected Action provides this wide range of beneficial uses without degradation of the physical environment, risk to health or safety, or other undesirable or unintended consequences.

Basis for Decision

Based upon the Trails Plan/EA and the entire agency record, NPS and the Trust determined that the Selected Action will not have direct, indirect or cumulative significant impacts on the human environment. The detailed analysis supporting this conclusion is in Chapter 5 of the Trails Plan/EA. NPS and the Trust will impose Best Management Practices (BMPs) such as those identified in Appendix C as specific conditions during the design of individual trails projects implementing the Selected Action. The following summarizes factors considered in this determination.

Geologic Resources

Trails and bikeways improvements will not increase the likelihood or intensity of seismic

activity at the Presidio or the risk of other geologic hazards, such as settlement or land sliding. Potential soil erosion impacts will be offset by required compliance with the BMPs included in the Trails Plan/EA and project Standard Conditions.

Hydrologic Resources

New and rehabilitated trails will avoid hydrologic features, such as sensitive areas surrounding creeks, springs, seeps and water bodies, and will be designed to reduce erosion and therefore reduce the likelihood of sedimentation and water quality impacts.

Biological Resources

Trail routes will be aligned or redesigned to manage human access and bypass sensitive habitat areas, and designed to the extent practicable to limit habitat effects, improve habitat values, and promote wildlife movement. Minimization and compensatory measures included both in the final Biological Opinion and the BMPs in the Trails Plan/EA will be incorporated into individual trails projects to minimize effects on biological resources.

Cultural Resources

Trail alignments will occur primarily in previously disturbed areas such as within existing road prisms and along social trails to avoid disturbing historic fabric (e.g., historic curbs and retaining walls), removing trees within the cultural landscape or altering character-defining features of the historic forest. All ground-disturbing construction activities will be subject to archaeological monitoring in accordance with NPS' GGNRA Programmatic Agreement or the Presidio Trust Programmatic Agreement Stipulation XIII and the Presidio Archaeological Monitoring Protocols (whichever is applicable at the time of monitoring).

Traffic Safety

Any narrowing of traffic lanes on park roadways to provide for bicycle and pedestrian use may result in a small reduction in travel speed for vehicles and associated vehicle capacity. This impact is considered minor because changes in capacity will not be sufficient to substantially increase congestion. Reductions in lane width or design exceptions will be granted after careful study by qualified traffic engineers to determine that proposed projects will result in an improvement over existing conditions for pedestrians, bicyclists or automobile traffic in terms of access, capacity or safety.

Visitor Use

Proposed improvements will substantially enhance the visitor experience. Although construction activities may temporarily detract from the natural setting of the park and somewhat limit access within the Presidio, development of new trail alignments will occur gradually in phases, so that construction-related impacts will be localized as well as temporary, thus lessening any short-term effect.

Visual Resources

The increase in linear miles of trails could expand the visible presence of improvements at the Presidio. The potential impact may be somewhat detectable from regional vistas, but is not expected to have a significant effect on visual resources due to the extensive vegetative cover of the Presidio and the low-profile nature of trails. In addition, some of the new trails will replace the deleterious impact of inappropriately placed social trails, and in other cases, pedestrian trails or service roads will be converted to more accessible multi-use trails. All new trails will be designed and constructed to visually blend with the existing surroundings to the maximum extent feasible, and to provide access to the Presidio's remarkable scenic vistas.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Air Quality

Construction of new and regraded trails may generate dust from "fugitive" sources, which could have minor, temporary effects on air quality within the park. As appropriate, construction contractors will implement the Bay Area Air Quality Management District's recommended control measures incorporated as BMPs into the Trails Plan/EA to reduce fugitive dust emissions and minimize any effects.

Noise

Construction activities associated with trail modifications could result in a temporary increase in noise levels within the park vicinity. Contractors will comply with all applicable regulations of the San Francisco Noise Ordinance to minimize construction-related noise impacts.

Cumulative Impacts

Overall, the incremental impacts associated with trails and bikeways improvements will be short-term or negligible and are not expected to result in cumulative effects that are significant. In many instances, even when combined with other past, present or future projects, the incremental contribution of the Selected Action to the cumulative effect on the Presidio will be beneficial.

Non-Impairment of Park Resources

Pursuant to the 1916 Organic Act, NPS has a management responsibility "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." Therefore, NPS cannot take an action that would "impair" park resources within the meaning of the organic statute.

According to NPS guidance, impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values. An impact would be less likely to constitute an impairment to the extent that it is an unavoidable result from an action necessary to preserve or restore the integrity of park resources or values. An impact would be more likely to constitute impairment if it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; and
- Identified as a goal in the park's General Management Plan or other relevant NPS planning documents.

Impairment of park resources is evaluated based on the type and intensity of impact and in terms of the types of resources affected. In general, beneficial impacts do not constitute impairment. With respect to the intensity of impacts, negligible and minor adverse impacts are not of sufficient magnitude to constitute impairment. Moderate and major adverse impacts may constitute impairment but do not automatically cause it. Rather, these impacts must be analyzed with respect to the three criteria listed above.

An analysis concerning impairment of park resources in Area A of the Presidio is provided at the end of each resource topic in Chapter 5 of the Trails Plan/EA. The analyses conclude that implementation of the Selected Action will only have minor adverse impacts to park resources or values. Taken as a whole, the Selected Action will improve the long-term health of resources key to

the natural and cultural integrity of the park and will increase opportunities for public enjoyment of the park. Consequently, implementation of the Selected Action will not constitute or result in impairment of park resources as provided under NPS' 1916 Organic Act.

Public Involvement

Scoping

The Trust and NPS invited and encouraged public scoping comments between October 1999 and June 2000 to identify issues and develop goals and objectives for the Trails Plan/EA. The scoping process included two public meetings, a series of focus group meetings, a design concept workshop, a survey of park users, and various opportunities for written comment. Key issues that emerged from public scoping have been considered and addressed in the Trails Plan/EA or responded to in the Response to Comments in Appendix B. Major scoping issues included the following:

- Preserve and protect park resources
- Maintain and enhance the Presidio's wilderness feel
- Emphasize trail and park interpretation
- Improve trail signage and park wayfinding
- Develop a hierarchy of connected trails with permitted uses for each, i.e., restrict bicycles to certain trails
- Improve on-street bicycle connections with striped and, where possible, separated bicycle lanes
- Enhance park amenities, e.g. , provide more garbage cans, improve lighting at trailheads, construct restroom facilities
- Calm park traffic and consider limited street closures, e.g., weekend closures
- Provide additional parking at major trailheads
- Enforce existing and new park regulations
- Increase the number of designated off-street bicycle trails
- Develop sanctioned off-leash dog areas

Trails Plan/EA

Prior to being made available to the public, the Trails Plan/EA was featured in a cover article in the September 2002 edition of the Presidio Post, the Trust's monthly newsletter with a distribution of more than 14,000 individuals, organizations and agencies that are interested in activities at the Presidio. The article provided information on the Trails Plan/EA planning and environmental review process, issues identified through the public scoping process and addressed in the document, goals and proposed improvements, and public involvement opportunities. The Trails Plan/EA was presented at a public meeting held at the GGNRA Citizens' Advisory Commission on October 22, 2002. In addition, three plan-related walks and bike rides were offered on October 26, November 1 and November 2, 2002 for the public to learn more about proposed trails and bikeways improvements.

At the time of release of the Trails Plan/EA on November 14, 2002, approximately 1,500 copies of its Executive Summary were distributed to Presidio tenants and residents, local neighborhood organizations and groups, and project neighbors. The Executive Summary provided an overview and key elements of the Trails Plan/EA, and information on the NEPA review process. Approximately 150 copies of the Trails Plan/EA were distributed to city, state and federal government agencies, public interest groups, neighbors and various individuals. Both the Executive Summary and the Trails Plan/EA were also available for review and accessible for download on the NPS' and Trust's websites (www.nps.gov/goga and www.presidiotrust.gov). The public was invited to provide oral comment on the Trails Plan/EA at a joint GGNRA and Presidio Trust public meeting held at the GGNRA Park Headquarters on January 28, 2003, during which members of the public were also

encouraged to submit written comments. Staffed tables were also set up at Crissy Field on February 2 and February 9, 2003 to distribute information and help the public understand the Trails Plan/EA. The 90-day public review period ended on February 12, 2003.

Public Comments

By the close of or shortly after the expiration of the public review period, NPS and the Trust had received a total of 100 written comment letters, faxes and emails on the Trails Plan/EA. In addition, oral comments were provided by 27 individuals at the January 28, 2003 public meeting. Fourteen of those individuals submitted written comment letters. The names of agencies, organizations and individuals commenting on the Trails Plan/EA, and summary responses to comments are provided in Appendix B of the republished Trails Plan/EA. Copies of all written comments and the transcript of the public meeting are available for review in the Trust's library.

In general, key issues raised by the public included:

- A desire for greater separation between pedestrians and bicycles on the more popular trails to avoid user conflicts
- A desire to retain as many existing trails as possible as secondary pedestrian access to enhance pedestrian access to the park
- A preference for greater opportunities for off-road mountain biking within the Presidio
- Support for the use of trails in the park by dog walkers (either on- or off-leash)
- A desire for better signage, especially on the regional trails and major bike routes, and traffic calming measures for user safety and comfort
- A desire for improved access to and interpretation of historic and cultural resources, such as a historic trail through the Main Post

Selected Action

The modifications to the Preferred Alternative developed in response to comments were summarized at a joint GGNRA and Presidio Trust public meeting held at the GGNRA Park Headquarters on May 20, 2003, and at a Trust public board meeting on June 17, 2003. The changes are included in this final version of the Trails Plan/EA.

Agency Coordination and Consultation

NPS and Trust prepared the Trails Plan/EA concurrently with other applicable environmental reviews or consultation as required under Section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1536), Section 307 of the Coastal Zone Management Act of 1972 (16 U.S.C. 1456) and the implementing Federal Regulations in 15 CFR Part 930, and Section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470f). To comply with these requirements, NPS and the Trust actively solicited the participation of the U.S. Fish and Wildlife Service (USFWS), the San Francisco Bay Conservation and Development Commission (BCDC), the Advisory Council on Historic Preservation (ACHP) and the California State Historic Preservation Officer (SHPO). The views of these agencies, which have been integrated into the Trails Plan/EA, are discussed below. Copies of all relevant correspondence are available for review as part of the formal public record.

U.S. Fish and Wildlife Service

On November 25, 2001, the Trust and NPS requested formal consultation with USFWS, pursuant to Section 7 of the Endangered Species Act of 1973. Prior to initiation of formal consultation, NPS and Trust representatives met and toured the Presidio with USFWS on November 6, 2000, to discuss and orient the parties to the Trails Plan/EA. The Trust and NPS again met USFWS staff on May 17, 2002, to

preliminarily discuss effects of the proposed action. In the time between the initial meeting and request for formal consultation, the Trust and NPS corresponded orally and in writing with the USFWS to review and discuss the proposed plan and consultation requirements. On July 23, 2002, USFWS issued its Biological Opinion on the effects of the proposed action on the endangered Raven's manzanita, San Francisco lessingia, Presidio clarkia and the threatened Marin dwarf flax. After reviewing the current status of these plants, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, the Biological Opinion concluded that the Trails Plan/EA, as proposed, will not jeopardize the continued existence of these species or adversely affect critical habitat of these species. The Biological Opinion also noted that, "in addition to habitat restoration, the plan will benefit native plant communities, including federally listed plants, and wildlife by managing human access and redirecting access away from sensitive habitat areas." Since issuance of the Biological Opinion by USFWS, NPS and the Trust have apprised USFWS of several changes to the Preferred Alternative in response to public comments, which have resulted in a long-term beneficial effect (e.g., a net gain of 932 square feet of proposed future habitat for the San Francisco lessingia). Due to the beneficial nature of these changes, it was determined that no further formal consultation was required.

San Francisco Bay Conservation and Development Commission

Pursuant to the Coastal Zone Management Act of 1972, the BCDC is required to review Federal projects which could affect the coastal zone and determine whether the proposed action is consistent with the BCDC's Amended Coastal Zone Management Program for San Francisco Bay. On November 15, 2002, the NPS and Trust submitted a description of the proposed action and requested that the Commission concur that the Trails Plan/EA is consistent with the BCDC's Amended Coastal Zone Management Program for the San Francisco Bay segment of the California coastal zone. Based on the information contained in those materials, on February 20, 2003, the BCDC considered and found that the Trails Plan/EA is consistent with the provisions of the McAteer-Petris Act and the policies of the San Francisco Bay Plan. The BCDC's Letter of Concurrence included the following statements:

"…[I]mplementation of the plan would involve the placement of small amounts of materials and the substantial change in use of areas such that the placement, extraction, or change in use would not have a significant adverse effect on present or possible future maximum feasible public access to the Bay consistent with the project, on present or possible future use for a designated priority water-related use, and on the environment, as defined in Commission Regulation Section 10601(b)(1) and thus is equivalent to a 'minor repair and improvement.'" In addition, San Francisco Bay Plan Map No. 4 identifies the Presidio as a park priority use area and contains a policy that states "[i]f and when not needed by Army, retain at least shoreline and undeveloped areas as regional park." (Recreation Policy 5(a) and Bay Plan Map No. 4, Policy No. 24.) The implementation of the Presidio Trails and Bikeways Master Plan would be consistent with the Bay Plan Map notes by encouraging recreational use of the Presidio.

Advisory Council on Historic Preservation / California State Historic Preservation Officer

Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires NPS and the Trust to take into account the effect of their undertakings on historic and cultural resources, including the National Historic Landmark District (NHLD). NPS and the Trust each entered into programmatic agreements (PA) with the ACHP and the SHPO that apply to all undertakings under their jurisdictions. The PAs provide a framework for reviewing the project effects

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

internally and for consulting with other parties under certain circumstances.

NPS and Trust staff reviewed the Trails Plan/EA and determined that the proposed undertaking will not have an adverse effect on historic properties that contribute to the significance of NHLD, because all work will be in keeping with the Secretary of Interior's Standards for the Rehabilitation of Cultural Landscapes and Historic Properties and will conform to the Standards, Principles and Planning District Guidelines of the Presidio Trust Management Plan to the maximum extent possible. NPS and the Trust are committed to conducting additional NHPA review within their separate jurisdictions as necessary at the time individual trail segments are designed and proposed for funding. On February 24, 2003, the NPS and the Trust submitted the Trails Plan/EA to ACHP and SHPO, with a request for concurrence with this determination. NPS and the Trust supplemented this information with the record of public commentary during the public review period. On March 18, 2003, the Trust and NPS held a telephone conference with the SHPO (ACHP could not be present). Based on review of the information, SHPO staff (and later, ACHP staff) concurred with NPS and the Trust finding that there will be no adverse effect to historic properties caused by this undertaking. In a follow-up letter memorializing the course of the consultation, SHPO thanked NPS and Trust staff for "preparing an informative and responsive consultation package for this undertaking and for committing your agencies to carrying out all measures needed to secure the validity of the 'no adverse effect' finding when individual actions are implemented in accordance with the final Trails and Bikeways Plan."

Finding

Having considered the information and analyses in the *Presidio Trails and Bikeways Master Plan and Environmental Assessment*, the comments of agencies and the public, the incorporation of Best Management Practices to protect, restore and enhance the environment and the entire planning project record of NPS and the Trust, it is the determination of the National Park Service and the Presidio Trust that the Selected Action is not a major federal action having the potential to significantly affect the quality of the human environment. There are no significant direct, indirect or cumulative effects on public health or safety, threatened or endangered species, sites listed on the National Register of Historic Places or other unique characteristics of the region. No activities implementing the Selected Action will involve resource effects warranting mitigations. Implementation of the Selected Action will not involve unique or unknown risks, cause loss or destruction of significant park resources or violate any federal, state or local law. Implementation of the Selected Action will not automatically trigger other actions that may require Environmental Impact Statements.Therefore, in accordance with the National Environmental Policy Act of 1969 and regulations of the Council on Environmental Quality (40 CFR 1508.9), an Environmental Impact Statement will not be prepared.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Recommended:

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Mai-Liis Bartling
Acting Superintendent, Golden Gate National Recreation Area

_____

Date

Approved:

_____

Jonathan Jarvis
Regional Director, Pacific West Region, NPS

_____

Date

_____

Craig Middleton
Executive Director, Presidio Trust

_____

Date

This is a true and correct copy of the final, signed version of the Record of Decision. Executed copies are available for review at the GGNRA Park Headquarters and in the Presidio Trust Library.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

APPENDIX B: RESPONSE TO COMMENTS ON THE PRESIDIO TRAILS AND BIKEWAYS MASTER PLAN AND ENVIRONMENTAL ASSESSMENT

The public involvement process for the Presidio Trails and Bikeways Master Plan and Environmental Assessment (Trails Plan or plan) is described in Chapter 1 of the Trails Plan and in the text of the Finding of No Significant Impact (Appendix A). This appendix provides: 1) a summary and analysis of the number, form, origin and content of comments and characteristics of commentors; 2) a list of all commentors (agencies, organizations and individuals); and 3) comment summaries and detailed responses.

General

The Trails Plan was circulated for public and agency review from November 14, 2002 to February 12, 2003, a period of 90 days. By the close of or shortly after the expiration of the public review period, NPS and the Trust received a total of 100 emails and written comments on the Trails Plan (Table B-1). In addition, 27 individuals provided oral comments at a January 28, 2003 public meeting. Fourteen of these individuals submitted written comment letters or comment cards prepared for the meeting (included in the following total).

Table B-1. Format of Written Comments

E-Mails	66
Letters or Faxes	28
Comment Cards from Public Meeting	6
Total	100

Written comments were received from three public (regional and local) agencies, six bicycle and trails advocacy groups, five neighborhood associations, three historic preservation and natural resource conservation organizations, and 92 individuals (several individuals submitted multiple written comments). Copies of all written comments and the transcript of the January 28, 2003 public meeting are available for review in the Trust Library, at 34 Graham Street in the Presidio.

About one-third of the commentors supported or expressed overall favorable views of the Trails Plan (Table B-2). The Bay Area Ridge Trail Council (BARTC) commended the Trails Plan, saying that "when implemented, [it] will go a long way towards creating a safe and enjoyable trail system at an important national park." The Marin County Bicycle Coalition (MCBC) stated that the Trails Plan "is an excellent starting point to improving the use of alternative transportation in the Presidio." The Neighborhood Associations for Presidio Trails Planning (NAPP) stated that the Trails Plan is a "comprehensive and well-considered response to the goals" set forth.

Table B-2. General Position of Commentor

Offered General Support of the Trails Plan	31
Expressed Dissatisfaction with the Trails Plan	13
No Stated Position on the Trails Plan	68

Those that expressed disapproval of the Trails Plan generally did so because they felt that they were part of a user group that was not well represented within the Trails Plan (e.g., off-leash dog walkers and off-road mountain bicyclists). For example, the International Mountain Bicycle Association (IMBA) commended the Trails Plan as being "generally well thought-out," but "short-sighted to completely ignore mountain biking." Others believed there to be a "glaring omission" that the Trails Plan was silent with respect to dog walkers and off-leash recreation within the park. These issues are addressed in greater detail in the responses to comments provided below.

Many of those commentors expressing general support for the Trails Plan also stated a position in favor of one of the alternatives (Table B-3). Only one individual supported Alternative A (the No Action Alternative), because, among other reasons, "any further development of areas for usage by the public will only be invasive and destructive to

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Table B-3. Preference of Commentors in Support of the Trails Plan	
Preferred Alternative A	1
Preferred Alternative B	7
Preferred Alternative B or C	4
Preferred Alternative C	8
Preferred Alternative D	1

the park's natural environment" and "the changes proposed will not bring any more revenue to the park but will surely incur ongoing increased expense." Seven commentors, including NAPP, stated a preference for Alternative B (with several recommended modifications) because they believe it provides the broadest range of trail types and would be inclusive of the most park users. MCBC called Alternative B a "well-developed balance for the Presidio." BARTC and seven others favored Alternative C because they believed it provided more multi-use/shared trails than the other alternatives: "We believe multi-use trails can be safely enjoyed when properly planned and constructed." The San Francisco Bicycle Coalition (SFBC) and three others endorsed either Alternative B or C, "as they seem to offer the best and most promising choices for bicycles in the Presidio." Only one commentor preferred Alternative D, because he favored separating bicyclists from pedestrians.

Half of the individuals submitting written comments explicitly characterized themselves in some particular manner (e.g., "I am a trail runner"). Of those individuals who identified themselves as a particular type of user, the largest groups were mountain bikers followed by San Francisco residents (Table B-4).

Table B-4. Self Identity of Commentors (User Types)	
Mountain Biker	13
San Francisco Resident, Nonspecific	8
Neighbor	7
Presidio Bicycle Rider and Commuter	3
Dog Owner/Walker	3
Business Executive	1
Ex Presidio Soldier	1
Frequent to San Francisco	1
Hike Leader	1
Hiker	1
Industrial Light and Magic Employee	1
Marin County Resident	1
Monterey County Resident	1
Presidio Resident	1
San Francisco Home Owner	1
San Francisco Property Owner	1
A “Senior About to Join the Presidio YMCA”	1
No Identified Type	46

Roughly half of all comment letters offered a personal preference or opinion on a single issue (Table B-5).

Table B-5. Single Issue Letters, Emails and Comment Cards	
Allow Off-Road Mountain Biking	19
Prohibit Off-Road Mountain Biking	11
Allow Off-Leash Dog Walking	18
Prohibit Off-Leash Dog Walking	1
Prohibit Crushed Rock for Trail Surfaces	1

Finally, only one comment letter received offered comments on the environmental consequences of the alternatives (Chapter 5), and these comments were limited to the No Action Alternative and the discussion of impairment to park resources and values.

A list of commentors on the Trails Plan is provided in Table B-6.

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Table B-6. Agencies, Organizations and Individuals Commenting on the Trails Plan

Regional Agencies	Golden Gate Bridge, Highway and Transportation District (GGBHTD)			
	San Francisco Bay Trail (SFBT) (Administered by the Association of Bay Area Governments)			
City and County Government Agencies	Recreation and Park Department of the City and County of San Francisco			
Bicycle and Trails Advocacy Groups	Bay Area Ridge Trail Council (BARTC)			
	International Mountain Bicycling Association (IMBA)			
	Marin County Bicycle Coalition (MCBC)			
	Rails-to-Trails Conservancy, California Field Office (RTC)			
	Responsible Organized Mountain Pedalers (ROMP)			
	San Francisco Bicycle Coalition (SFBC)			
Neighborhood Associations	Cow Hollow Association Inc. (CHA)			
	Lake Street Residents Association (LSRA)			
	Neighborhood Associations for Presidio Trails Planning (NAPP)			
	Trails Planning Association for the Richmond (PAR)			
	Presidio Heights Association of Neighbors (PHAN)			
Historic Preservation Organizations	California Heritage Council (CHC)			
	Fort Point and Presidio Historical Association (FPPHA)			
Natural Resource Conservation Organizations	National Parks Conservation Association (NPCA)			
	San Francisco Tree Council (SFTC)*			
Individuals	Michael Alexander	Alan Frame	Keith Kelsen	Dan Reynolds
	Casey Allen	Gary S. Fergus	Chris Lang	Brian Rogers
	Terri Alvillar	Jeff Gibson	Ellen Lapham	Kathy Roth
	Carol Arnold	Merel Glaubiger	Jennie Lee	Jacques Rutschmann
	Jonathan Baker	Kent Goldman	Jo Leggett	Keith Saggers*
	David Green Baskin, Baskin & Grant, LLP	Stephen Golub*	John Lewis	Robert G. Schuchardt
	Jean Behse	Rebecca Gray	T. Lovato	Kelsey Schwind
	Kelly Bennett	Thackary Grossmansky	Frank Lurz	Charlotte Shultz
	Bob Berry	Meeghan and Jon Guidi	William R. Mains	Karl W. Steinbrecher, CF
	Connie Berto	William Hadley	Evan Marquit	Joseph Stroman
	Elaine Best	Alice Wiley Hall	Keith McAllister	Aaron Dellolacono Thies
	Lucia Bogatay*	Jane F. Hickerson and Glenn L.	Mary McAllister	Peter Thompson
	Rod Brown	Karin Hu	Joanne McGarry*	Vicki Tiernan
	Robin Buckley	Anthony Imhof*	Shawn McGhie	Sharon Tsiu
	Christy Cameron	Valerie S. Iwata	Gilman Miller	Martin Unversaw*
	Margory Cohen	Lorene Jackson	Nancy Montgomery	Suzanne M. Valente
	Tom Coleman	Marilyn Jasper, Clover Valley	Michael Mooney	Mike Vandeman
	Jessica Conner*	Fimban Jewell*	Margaret Moore	Lisa Vittori*
	Carol C. Copsey, Esq., The Berkeley Law Group, P.C.	Mary Johnson	Jeff Morley, DDS	Mike Waite
	Peggy da Silva	Rebecca Johnson	William Newmeyer	Elisabeth Warren
	John Dalessio	William R. Kales	Paul W. Nordquist	Margaret Zegart*
	Matthew E. Dambrov, Esq.	Erika L. Karr	Susann Novalis, PhD	
	David Deuber	John Keating, Esq.*	Jonathan Rayner*	

*Oral Comments at Public Meeting Only.

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Responses to Comments

Summaries of the comments received and responses are provided below. Comments and responses are organized by subject matter, with similar comments grouped together for response. In many instances, the source(s) of the comment is noted within the comment summary. All substantive comments have been considered and responded to equally. Responses may provide explanations and clarifications, as well as indicate any changes to the Trails Plan made in response to comments. Original comments are available for review in the Trust Library at 34 Graham Street, in the Presidio. Comment summaries and responses are organized into the following topic areas:

- Comprehensibility of Trails Plan
- Goals and Priorities
- User Separation and Conflicts
- Secondary Pedestrian Trails vs. Social Trails
- Improved Signage and Traffic Calming Measures
- Non-Infrastructure Improvements and Public Transit
- Character and Width of Trails and Bikeways
- Historic and Cultural Resources
- Mountain Biking and Off-Road Trails
- Dog Walking and Off-Leash Recreation
- Equestrian Use
- Tennessee Hollow
- Greenwich Gate
- Trail Programs and Organized Bicycle Events
- Future Public Input and Adjustments to Trails Plan
- Environmental Consequences
- Changes to the Preferred Alternative
- Miscellaneous Suggestions

Comprehensibility of Trails Plan

Several commentors requested that the Trails Plan be clearer, particularly to those with little knowledge of the Presidio. One individual suggested that the maps include street names and more detailed maps to show the differences between trail segments.

Response. A new location map has been added to Chapter 4 to show street names, and many locations within the park are now identified on the figures. Modifications to the Preferred Alternative from the November 2002 Trails Plan are highlighted in Figure 1-3. Pedestrian and multi-use trails describe pedestrian circulation in Figures 4-3A, 4-4A, 4-5 and 4-6A. On-street bicycle routes appear on Figures 4-3B, 4-4B and 4-6B. In addition, trails that are part of the trail corridor network appear in Figure 4-2.

Goals and Priorities

One individual commented that the goal of the Trails Plan should be to provide access, yet maintain a quiet reflective atmosphere in keeping with the spirit of a national park. "[T]his plan seems to err on the side of bicycle traffic and not to walkers, hikers, the disabled and birdwatchers who have little to call their own." SFBC believed that the Trails Plan's priorities should be placed on accommodating bicyclists of all skill levels and types in the Presidio. "[A]s many choices as possible in bike facilities should be offered… not only to existing cyclists, but also to potential riders who may choose to bike if the park's facilities are improved to be more inviting to new cyclists."

Response. A variety of users share the Presidio of San Francisco, including walkers, hikers, dog walkers, birdwatchers, recreational and commuting cyclists, families with children, family bicycle groups, runners and mountain bikers. In an attempt to accommodate all user groups to some extent, the Preferred Alternative in some areas emphasizes a quiet, reflective atmosphere, and in others a more social, promenade experience. As reflected in the goals in Chapter 2 of the Trails Plan, the intent is to provide for a variety of recreational experiences for the many users of the Presidio, while also providing for both cultural and

natural resource protection. The Preferred Alternative, as modified in response to comments, provides a balance between recreational uses and the other goals of the Trails Plan. For a summary of the changes to the Preferred Alternative, see Changes to the Plan in Chapter 1. Where the balance is drawn is a complex task involving the weighing of the needs of many different users and many different interests.

User Separation and Conflicts

SFBC and others suggested that, in general, auto traffic should be de-prioritized throughout the park: "This means that car parking should not be made ample and speed limits should be kept at 15 miles per hour… for the safety of all park users."

NAPP, Trails Planning Association for the Richmond (PAR), Presidio Heights Association of Neighbors (PHAN), the California Heritage Council (CHC), and a number of individuals recommended that for the safety of both parties, a greater separation between pedestrians and bicycles be provided on the more popular trails, especially on steep trails where bicyclists' speed may be of greater significance. One individual stated that, because of the difficulty of enforcing speed limits, multi-use trails tend to create conflicts for both pedestrians and bicyclists. Another urged to "[f]orce cyclists to obey traffic laws and avoid swearing at and running down people," and "[m]ake abusive language from cyclists an offense." Yet another stated that the Trails Plan's emphasis on multi-use trails "by definition" forces conflict between the differing uses that "must share the common path." "It is hard to contemplate the scenic beauty if you are bumping into other users." Another individual, who also made reference to off-leash recreation, said that "[c]onflicts can and should be addressed, but elimination of the activity (mountain biking) clearly would cause far more problems than it solves." The issue may be best summarized by the following comment: "While trail sharing can be both workable and desirable, many cyclists, as well as many hikers and other pedestrians, would prefer some opportunities for usage separation."

Response. The suggestion that auto traffic be de-prioritized in the park is consistent with the goals and objectives of the Trust and NPS. Primary transportation objectives include minimizing private automobile use, increasing the use and availability of transit and increasing pedestrian and bicycle options. The Trust's parking management practices include reducing parking supplies to a level just five percent greater than demand, and reducing the demand for parking with high parking fees and other measures. Transit service is provided by MUNI, Golden Gate Transit, and the PresidiGo Shuttle. Currently, the speed limit within the Presidio is 25 mph or less, with the exception of Lincoln Boulevard between the 25th Avenue Gate and Merchant Road where the speed limit is 30 mph. Per the California Vehicle Code, speed limits of 15 mph are only appropriate on alleys or at rail crossings or intersections with extremely limited sight distance. The existing speed limits within the park are intended to provide for a comfortable environment for bicyclists and pedestrians without overly restricting the flow of automobile traffic.

The Trails Plan provides an appropriate balance between all existing park recreational uses, while also providing improved resource protection throughout the park. Given the substantial demand for public use within the park, some change in the visitor experience is inevitable as location-specific trail adaptations are implemented or as use increases. The Trails Plan does provide for some instances of separate use, but given the relatively small acreage of the Presidio and the high demand for open space and recreational opportunity, shared use trails are appropriate in many areas within the Presidio. Use conflicts can and will be reduced by developing trails of an appropriate width and grade for expected uses. An appropriately graded multi-use trail will not be steep enough to encourage high speed cycling. In

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other areas, dispersed pedestrian trails and bike lanes for high-speed bicycle travel are provided. In response to comments, a number of changes have also been made within the Preferred Alternative to reduce potential user conflicts by improving trail connections and intersections.

With regard to the enforcement of bicycle speed limits, one goal is to initiate a trails stewardship program, in which users would be encouraged to participate in trail maintenance activities, including monitoring and controlling bicycle speed limits. Enforcement of speeding in the Presidio is the responsibility of the U.S. Park Police (USPP) and in Area A, NPS rangers. The Trust and NPS meet regularly with the officers and rangers to discuss increased enforcement of speeding and other moving violations that apply to both vehicles and cyclists.

Secondary Pedestrian Trails vs. Social Trails

NAPP, PAR and several individuals recommended that the Trails Plan retain as many existing trails as possible as secondary pedestrian access routes. They suggest that some existing social trails could be better designed to protect vegetation and avoid erosion. Several individuals expressed disappointment that few pedestrian-only trails seemed to be contemplated. ("The social trail west of the guardrail along the Coastal Trail is an example.") Several neighborhood associations claimed that closed social trails are likely to be re-established if a designated trail is not provided. One individual remarked that social trails "are the product of short term thinking: if I tromp through here, it will take me from A to B. Subsequent users are typically exhibiting herd behavior." He continues: "[B]efore removing a social trail, the reason for its creation needs to be determined, and an alternative with fewer or no impacts provided where possible." Another individual seeks greater accommodation of trail uses with natural resource protection: "The operating assumption ought to be preservation of existing trail uses with the minimum impact necessary to accomplish other park goals." And later: "The presumption must be to preserve – not to close down the existing trail system." The National Parks and Conservation Association (NPCA) and others support the removal of social trails that impede natural processes or disrupt sensitive habitat: "[W]e urge you to remain committed to restoring a more native natural environment to the Presidio." However, not all shared this opinion: "Do not plant sensitive native plants that remove recreational space," and "the Park Service should be in the business of facilitating appreciation and use of the park, not in the business of fencing the public out of parks." Another requested that the Trails Plan clearly state how many social trails will be replaced by designated trails. "We will not be herded into a handful of public spaces that have not yet been claimed by the native plant movement…Closing one-third of the trails in the Presidio is not reasonable accommodation."

Response. The Preferred Alternative provides trail connections where there is a clear demand for one, but removes social trails that create redundant connections or where the resource value outweighs the need for trail access. NPS and the Trust recognize that a social trail is evidence of a desired connection through the park. In many cases, the Preferred Alternative calls for a social trail corridor to be upgraded as the permanent alignment for a designated trail, except in areas where doing so would exacerbate problems such as erosion or damage to native ecosystems or historic forest. In most cases where the Trust and NPS have proposed to close social trails, there are a multitude of small, interwoven social trails that often provide a similar experience in similar conditions. By creating a single, well-designed corridor, the connection can be maintained while eliminating or minimizing the deleterious effects on resources associated with social trails.

The Trails Plan preserves the trail system and creates a sustainable, well-designed trail network,

so that trails and trail use do not lead to damage of natural and cultural resources. Smaller, secondary trails that have a very similar feeling and provide nearly equivalent access to existing social trails are provided for and shown in the Preferred Alternative as secondary pedestrian trails. Within the Preferred Alternative, there are 33.1 km (20.7 mi) of pedestrian trails. Of the 15.9 km (9.9 mi) of social trails that are mapped within the park, 8.8 km (5.5 mi) are being converted to designated trails. Refer to Table 5-1 in the Trails Plan for details of social trail conversion.

In response to comments, the Preferred Alternative has been altered to reflect the desire for fewer trail closures and more pedestrian-only paths. More social trails will be converted to designated trails, including the trail leading from Battery Marcus Miller to North Baker Beach, and a connection from the Washington Boulevard overlook to Lincoln Avenue. These changes will improve public access where there is a high demand, without sacrificing resource values or protection because the number of multi-use trails is being decreased, and more emphasis is being placed on improved pedestrian trails and the network of on-road bike lanes.

With regard to the California Coastal Trail, Lincoln Boulevard is a narrow, busy street. The conversion of the existing social trail west of the guard rail to a multi-use trail will allow family bikers, hikers and runners to experience this unique corridor without having to negotiate heavy traffic. An additional opportunity for pedestrians to get away from traffic and experience the coastal bluffs and ocean is provided by the trail that extends down the bluffs to North Baker Beach.

Improved Signage and Traffic Calming Measures

Several commentors encouraged NPS and the Trust to provide better signage, especially on the regional trails. "The Presidio, despite all the good work since it was turned over by the Army, remains a confusing place and lack of trail signs adds to this." And: "Picking up [the Ecology Trail] from the Main Post was pure guesswork, and it wasn't until I could identify Inspiration Point on the upper end that I knew I was on the right path." PAR cautioned that pedestrians and bicyclists must be informed "clearly and concisely" of the designated use for each trail and bikeway section in the Presidio, and recommended using diagrams and electronic media. However, PHAN recommended that signage along all trails be as "discreet" as possible.

Several commentors requested signage at specific locations. BARTC requested that the Trust and NPS encourage the Bridge District to provide signage for the Bay Area Ridge Trail, the California Coastal Trail and the San Francisco Bay Trail, as well as a kiosk or wayside sign about regional trails near the Golden Gate Bridge plaza. One individual requested better signage on Long Avenue. NAPP requested that signs be added "reminding bicyclists to limit speed and watch for pedestrians along the Golden Gate Promenade and West Pacific Avenue from Arguello Boulevard to 15th Avenue." The San Francisco Bay Trail (SFBT) requested that Bay Trail signs be included in the design of trailhead displays, trail markers and directional signs.

SFBC commented that all major bike routes in the park should be striped, including the length of the following streets: Lincoln Boulevard, Arguello Boulevard and Presidio Boulevard. For areas where Class II and Class III bike routes are the only feasible alternatives, NPCA recommended appropriate steps be taken to slow traffic in these areas, have clearly defined bike lanes, lighting and signaling to improve the safety and comfort of road cycling. One individual approved of only striping Class 2 bike lanes in the uphill direction, but would like to see signs posted at the start of downhill roadway segments reminding motorists to watch for bicycles and share the road. SFBC concurred: "Where streets are too narrow to add bike lanes, signage should be installed stating 'Bikes Allowed Use of Full Lane' as is being done in hundreds of places around the city."

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MCBC and several individuals had specific suggestions for traffic calming and signage, such as raised pedestrian sidewalks for increased user awareness, map kiosks at key trailheads for user route finding, and "fog line" striping (striping along the shoulder) on Class III bike routes to increase separation of motor vehicles and bicyclists. The Rails to Trails Conservancy (RTC) and others also encouraged clearly delineated bike lanes, improved lights and signaling, and other efforts to improve bicycle safety and comfort. One individual recommended investigating one-way roads with contra flow bike lanes to increase safety for pedestrians, joggers and bicyclists. PHAN encouraged developing a means to enforce "No Bicycling" signs on trails where bicycles are prohibited.

Response. The Trails Plan calls for clear and concise roadway and trail signage to identify trails and bikeways, to guide users to their destinations and inform motorists of the presence of bicyclists and pedestrians. The number and type of signs called for will not, however, be so pervasive as to create "sign clutter" and detract from the park setting. The specific information that may be included on trailhead signs and guides is now listed in Chapter 3 of the Trails Plan. The Trust and NPS are currently working with the Golden Gate Bridge, Highway and Transportation District (GGBHTD) to develop improvements to the Bay Trail connecting Crissy Field and the bridge plaza. These improvements will include addressing wayfinding issues.

The Trust and NPS will continue to incorporate traffic calming into plans for roadway and intersection improvements within their separate jurisdictions. Several projects that specifically address pedestrian and cyclist safety and slow the speed of vehicular traffic are currently underway or scheduled for construction, and others will be planned in the future as funding and budgets permit. Near term projects include providing Class II bike lanes and a continuous sidewalk on Lincoln Boulevard between the 25th Avenue Gate and Pershing Drive. Providing for safe and efficient pedestrian and bicycle travel with the improvements identified in the Trails Plan and the associated increased presence of alternative modes of transportation will also inherently reduce the speed of vehicular traffic by making motorists aware of cyclists and pedestrians. On bikeways where adequate width for striped bike lanes is not available, signage or paving stencils will be provided over time to designate a bikeway as a Class III shared bike route, which will both warn motorists and guide cyclists. Road widening may be considered in some cases to allow the addition of bike lanes.

With regard to striping on all major bicycle routes, striping is proposed on Lincoln Avenue, except near the Cavalry Stables where the westbound cyclists will use Patten Road and a new multi-use connector. Arguello Boulevard will be striped on the uphill side only, expecting that downhill cyclists will take the lane; and Presidio Boulevard will also be striped in the uphill direction only. Other striping is shown in Figure 4-4B, Alternatives B and C - Mixed Use and Shared Use On-Street Bicycle Routes. Signs that read "Bicycles Allowed Full Use of Lane" will be posted where appropriate.

Non-Infrastructure Improvements and Public Transit

NPCA and MCBC stated that the Trails Plan could go further in providing policy recommendations, guidelines and incentives for current and future employees, users and residents of the Presidio to use alternative transportation modes to get to and around the Presidio. Recommendations included valet bicycle parking for special events, transportation demand management programs for Presidio employees and tenants, weekend closure of roads to motor vehicle traffic (such as on Washington Boulevard), bicycle rentals and bikeways and trails information. SFBC and others commented that there is a clear need for more bike parking in the park, particularly at high destination spots. "Many a time I've locked my

bike to a forlorn signpost (if not already taken!), hoping it will be there when I return." GGBHTD supports efforts to coordinate bicycle-pedestrian circulation with public transit: "It is also important that a trail's impact on safe and efficient bus operation be considered during the development of a specific trail plan."

Response. Many of the suggested policy recommendations and guidelines have already been adopted as part of the Presidio Trust Management Plan (PTMP) or are part of the NPS General Management Plan Amendment (GMPA), and therefore do not need to be reiterated in the newly proposed actions under the Trails Plan. The PTMP describes the jobs-housing balance that will allow more Presidio-based employees to live in the park, as well as the Transportation Demand Management (TDM) Program and parking management program that provide incentives to use alternative transportation modes (see PTMP Appendix D). The PTMP (page 49) also calls for further study of the pros and cons of traffic restrictions on Washington Boulevard. NPS is including many of these concepts in its planning for Area A.

The Trust and NPS may consider implementation of measures that are not explicit in the policies of PTMP or the TDM program (e.g., valet bicycle parking at events, bicycle rentals or temporary weekend road closures) as part of the ongoing management of Presidio events and programs. For example, the Trust has committed to future studies to evaluate the pros and cons of traffic restrictions on Washington Boulevard. No long-term commitments are being made on these issues in the Trails Plan beyond the policies adopted in PTMP.

The Trails Plan calls for bike racks to be placed at many trailhead locations. Installation of bike racks throughout the Presidio is part of the TDM program described in the PTMP. The Trust and NPS will continue to install bike racks in the park and assist tenants with adding bicycle parking.

During trail and bikeway implementation, the Trust and NPS will consider the locations of transit stops in specifically locating trails and bikeways, as well as the additional lateral space needed by transit buses within the roadway cross section, particularly where buses will need to negotiate turns.

Character and Width of Trails and Bikeways

One individual suggested that pedestrian trails should generally be narrower to permit a more intimate and calm visitor experience: "Trail width should be matched to surrounding scenery." He recommends a 1.8 m (6 ft) minimum standard for Class 2 bikeways to allow safe passing. Another suggested that multi-use trails need not be 4.2 m (14 ft) wide, and that 1.2 m (4 ft) wide would easily accommodate pedestrians and bicyclists: "A wonderful example exists at Old Springs Trail in Marin in the Tennessee Valley area. A perfect model for dispersed." Another commentor disagreed: "The handlebars on a mountain bike are typically 24 inches wide, and the width of a person's shoulders ranges in size, but can be as much as 22 inches or more. This leaves very little room for clearance on a 36- to 48-inch path." He added: "The experience of repeatedly being passed by cyclists traveling at speeds of 15 miles per hour and more, commonly makes pedestrians exceptionally nervous and apprehensive. These are not experiences sought by people that come to visit parks." One commentor noted that "[t]hroughout all counties of the Bay Area, fire roads are roughly 6-foot wide dirt trails that accommodate multi-use traffic well."

Another commentor noted that, where possible, trails should be wheelchair accessible: "[H]owever, there may be places where that is not possible due to the destruction that a wide multi-use trail would cause (such as along the California Coastal or Ecology Trails). In those cases, I would encourage upgrading existing roads (such as Lincoln Boulevard or Arguello Boulevard) to safely accommodate wheelchairs." Finally, one individual

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suggested that "crushed rock" not be used for trail surfacing because such surfaces are "very aggressive" to bare feet.

Response. The Trust and NPS have carefully weighed the needs and desires of trail users against the available overall width in trail corridors and the objective of minimizing negative impacts to natural and cultural resources. This consideration led to identification of multi-use trails in some corridors and pedestrian trails and bike lanes in others.

The Trails Plan strikes an intricate balance throughout the planned system among these many competing issues, factors and interests. In determining the standard width of multi-use trails as discussed in Chapter 3, the Trust and NPS considered the comfort of two-way cyclist and pedestrian travel. Based on the comments received, the minimum width has been changed from 2.4 m (8 ft) to 1.8 m (6 ft). It should be noted that this is proposed as a standard width, and may be adjusted in some situations where appropriate. In addition, most trails that appear in the Preferred Alternative as multi-use trails will be wheelchair accessible, as will certain pedestrian trails. Although many commentors were concerned about shared trails, proper design, alignments and trail user education are appropriate means to minimize potential user conflict. Multi-use trails remain necessary and appropriate in some areas. With increasing use of the park, it is important that all users be encouraged to share trails courteously.

Similarly, the standard width of Class II bike lanes uses AASHTO and Caltrans standards, and exceptions are determined based on the available overall width, the minimum width that would safely accommodate cyclists and the maximum width beyond which motorists tend to use the bike lane for parking or as a passing lane. Per the Trails Plan, bike lanes may be as narrow as 4 feet in very constricted locations, with the standard Class II bike lane 5 ft wide.

In response to the request that crushed rock not be used, the Trust and NPS carefully select surface materials for trails, taking into account factors such as the purpose and location of a trail or walk, and the potential for erosion and other environmental impacts. While crushed rock may be used, stabilized, compacted decomposed granite is a proposed granular surface and it is smoother than crushed rock. In other cases, the native soil material may be used, where feasible. For safety reasons, neither the Trust nor NPS endorse barefoot trail use.

Historic and Cultural Resources

Both CHC and the Fort Point and Presidio Historical Association (FPPHA) urged the Trust and NPS to provide better access to and interpretation of historic and cultural resources, such as a historic trail through the Main Post and a trail spur to the former Nike Missile site.

Response. The Trails Plan includes the Presidio Promenade and connectors throughout the Main Post, providing access to historic sites in the Main Post area and other areas, and to non-historic sites such as the former Nike Missile site. Interpretation of historic, natural and other resources may be accomplished along the trails through the use of signs or trail guides. Development of a guide to the historic Main Post, using the route suggested, is compatible with goals of the Trails Plan, as is a guide to the Batteries and Bluffs loop, which would include the former Nike Missile site. In response to the comments, the sentence about "access to and/or interpretation of historic and cultural resources" in the November 2002 Trails Plan has been revised in the republished document to read "access to and interpretation of historic and cultural resources."

Mountain Biking and Off-Road Trails

The issue of off-road mountain biking generated more comments than any other issue within the Trails Plan, and was the subject of at least one letter writing campaign (see "Access Alert: Mountain Biking in the Presidio" on www.romp.org). Many commentors believed that none of the alternatives allow for any off-road mountain biking within the Presidio, and noted the absence of trails in San Francisco and the limited opportunities for the sport. "The Presidio is a tremendous resource that represents an outstanding opportunity for this kind of recreation in the midst of an urban environment." And: "It is hard to imagine that trail cycling – shared-use, narrow trails, dedicated wider trails, or both – could not be accommodated somehow." On the whole, mountain bicyclists maintained that the sport is a legitimate form of trail use with manageable physical and social impacts (i.e., through proper design and trail maintenance) and assert that they are responsible trail users, respectful of others ("it seems both wasteful and unfair to declare that certain users must go elsewhere").

Mountain bicyclist advisory groups, such as IMBA and Responsible Organized Mountain Pedalers (ROMP), offer reasons why off-road mountain biking in the Presidio is important. They explained how and why multi-use off-road biking is safe and feasible, how mountain biking can improve the recreational experience in the Presidio and how sustainable trail building techniques make mountain biking no more damaging to the trail than any other use. Individuals wrote about their backgrounds, volunteer and trail building experiences, and how the mountain biking community is instrumental in improving public trails.

Commentors supporting off-road mountain biking offered thoughtful suggestions. Two individuals suggested a system of alternate use in which all user groups have a designated use time ("timesharing") which would be prominently posted at the trailhead and along the trail. Another requested a trial period, the outcome to depend on "trail maintenance dedication, erosion control and effect, and balanced and structured public feedback." The same individual also suggested a permitting system: "For say, a moderate annual fee, users could have permits to ride on trails," and trail use could be subject to "[w]eather/trail condition-controlled access." Yet another noted that mountain biking participants are often in high income brackets, and given the Trust's need for economic self-sufficiency, to ignore mountain biking "will serve only to alienate a large portion of the area's population that might otherwise use the trails and other income-generating facilities in the Presidio." Several commentors suggested that if off-road bikeways are permitted, they should be part of a loop, "or bicyclists will create an off-road social loop of their own."

Others did not share the views of mountain bicyclists and urged the Trust and NPS not to allow off-road mountain biking in the Presidio, and suggested that the activity is "an ugly can of worms," "uncontrollable," "inappropriate," "totally unnecessary," "industrial grade recreation" and a "frivolous pastime." Many offered their own personal experiences, websites and supporting information to show the damage of mountain biking, and "the safety hazards this high-speed sport presents to other users." Individuals pointed out bicyclists have many appropriate paved roads with minimal traffic on which to ride in the park. "Footpaths should be just that, for hikers and other foot traffic." And: "It's time to make it a crime – please keep bikes on paved roadways only." One commentor remarked that "mountain bike adherents will promise you anything and tell you anything to gain access to public lands. Once access is obtained, they slide into anarchist behavior." Another: "The situation will get completely out of hand, and too late, Presidio staff will discover that the genie has escaped

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forever from the bottle." And: "If you do not think mountain biking is, bottom line, a thrill sport, I invite you to stop by your local newsstand and peruse the mountain bike magazines." Some noted that the bulk of bicyclists are thoughtful, law abiding individuals, but the "vocal and aggressive minority have made it miserable." "The peaceful contemplative trail experience is destroyed by speed, rudeness, sometimes frightening and dangerous interactions." Others noted the concerns of the elderly, not "spry enough to jump out of the way… and afraid of being hit." "They have been displaced, and that is a shame." Still others contended that the "misdeeds of a few should not work to exclude those of us that respect the rules, the trails, and other trail users," and recommended "[u]se of volunteer, trained bike patrols for enforcement. ("This has worked successfully in other areas.") And: "Hopefully, responsible bikers have improved the long-ago stereotype of 'bad boy' bikers tearing up trails all over the map. There may be a handful still, but there are also drivers that drive recklessly in cars. That's why we have rules and enforcement for violators."

Response. The Trust and NPS acknowledge that there is a wide range of differing, sometimes conflicting, opinions about the appropriateness of mountain bike use within this and other public parks. The Trails Plan creates a network that serves the greatest diversity of users, without favoring any one user type. The Presidio is both a national historic landmark and home to a number of endangered species and rare ecosystems. Although high-speed mountain biking on steep single track trails will not be accommodated, opportunities to tour and explore the Presidio by bicycle, both on road and off-road, will be provided along trails that have been designed so as not to impair, impede or negatively affect valuable Presidio cultural and natural resources.

The Trails Plan provides a balance between all the desired recreational uses of the Presidio, and protection of natural and cultural resources. The multi-use trail network provides off-road access throughout the park for mountain bikes and wheelchair users, as well as pedestrians. All of the alternatives provide some off-road mountain bike use, and the Preferred Alternative has about 30.1 km (18.8 mi) of off-road trails appropriate for mountain bikes. Mountain biking is thus one of the many uses that is being accommodated. Because of the relatively small area of the Presidio, shared trails are a much more feasible solution than separate trails. Also, the relative impact on natural and cultural resources from completely separate networks would be unacceptable. The Trust and NPS appreciate that most mountain bike users are responsible trail users, and willing to participate in trail maintenance projects. The Trust and NPS agree that with proper trail design and user education, mountain biking can be a safe and feasible use on some trails within the Presidio, and look forward to involving mountain bikers and other trail users in the future trail stewardship program.

Creating a system of timesharing, where certain types of uses would be allowed at certain times of day, is not currently being considered because it would create a restriction difficult to enforce and unnecessarily complicates trail use and enforcement. Also, because there are such a wide variety of users within the Presidio, ranging from people who use the Presidio every day to those who are one-time visitors, having trails closed to some uses during certain times of day would create confusion and frustration rather than a solution. With regard to the suggestion of a trial period for multi-use trails, any long-term planning effort is subject to adjustments based on experience gained, among other factors, during the life of the Trails Plan. New multi-use trails will be introduced gradually, and their success will inform future implementation efforts. As was suggested by another commentor, the multi-use trail network, in combination with the on-road bike lanes, creates a number of loop opportunities for

cyclists throughout the Presidio. Mountain bikers will be encouraged to participate in the maintenance of the designated trail network of the Presidio. At this time, there is no intention of creating a permit system or fee system. Mountain biking, like any other outdoor recreational use of the Presidio, is an aspect of the public's use and enjoyment of a public park. The Trust and NPS intend to make the outdoor spaces in the park generally accessible to the public. The Trust plans to do so through leasing (or possibly philanthropic support) that over time generates sufficient revenue to pay for non-revenue generating uses and resource improvements, like the improved system of Presidio roads and trails.

Dog Walking and Off-Leash Recreation

Many commentors noted that the Trails Plan makes no reference to the use of trails in the Presidio by dog walkers (either on- or off-leash) or for pet recreation. "The analysis ignores the extent of the dog walking currently occurring in the Presidio." The Trails Plan "should reflect the extensive public comment in favor of off-leash recreation on Presidio trails." And: "[w]e are concerned that provisions for your many neighbors that use the Presidio regularly for walking our dogs may be being neglected or overlooked." And: "[T]he plan… virtually whitewashes the input of the dog community from the body of the document." Many individuals mentioned that the Trails Plan "at the very least" should clearly state that the Trust and NPS are awaiting results of the Advanced Notice of Proposed Rulemaking (ANPR) process for guidelines on management of off-leash recreation on GGNRA lands. More often than not, these individuals also wanted to see a clear reflection of the input from the off-leash community, stressing the value of this activity to a significant segment of the San Francisco population. ("This could be noted in a positive way by stating that the Trust and the Park Service support the activity and will include it as part of the overall recreational network, in conformity with local regulations.")

NPCA and others suggested that the Trails Plan include on-leash dog walking and dog recreating in the definition of multi-use trails (one individual wanted assurance that dogs on-leash were intended to be allowed where pedestrians are allowed). The organization wished to see enforcement of current regulations that require dogs to be leashed in national park areas for the safety of visitors and for maintaining the integrity of park resources: "We do feel it is important, however, to recognize this use of trails and pedestrian routes in the Presidio for those with pets." Others requested designation of specific trails where off-leash dog walking would be allowed, citing that off-leash dog walking is one of the "historical and traditional recreational activities in the Presidio." One individual commented that a number of popular trails are particularly well-suited to people with off-leash dogs, because portions of the trails are set away from vehicular traffic, while another at the public meeting disagreed, stating some dogs "don't necessarily like to encounter another dog surging ahead of its owner, off-leash," concluding, "it's not very safe." Another suggested that there could be specific hours and areas where dogs could be off-leash, "thus making everyone happy." Yet another at the public meeting said she would "prefer to pay you ten dollars a month, or ten dollars a year, for the privilege of being in the Presidio with my dog, rather than have to fight with you…" However, one individual recommended that dogs should not be allowed off-leash on Presidio trails and bikeways, stating that they are "dangerous to small children and bike riders."

Response. The Trust and NPS acknowledge the popularity of the Presidio for people and their dogs. In the November 2002 Trails Plan, NPS and the Trust assumed that on-leash dog walkers were one of many different types of pedestrians, but did not make this assumption explicit. The republished Trails Plan has been revised to clarify that Presidio visitors with dogs on leash are

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allowed on all pedestrian and multi-use paths. Specifically, a new discussion on dog-walking has been added to Chapter 2, under User Groups. The added discussion recognizes that people who are walking and recreating with their dogs are pedestrian users of trails in the Presidio. As such, people with dogs on leashes would have access to all pedestrian and multi-use paths.

In response to commentors' suggestions, the Trails Plan now makes reference to the ongoing rulemaking process for off-leash dogs within GGNRA as a whole. The Trust will be working with NPS in determining a future consistent policy. No decision regarding off-leash dog walking within the Presidio will be made until the rulemaking process is completed. If the rulemaking determines that the off-leash dog walking is permitted in GGNRA, it will then be appropriate to determine the location and extent of that activity. The following information from the GGNRA website (http://www.nps.gov/goga/pets/anpr/pdf/anpr-brochure.pdf) provides a brief history of the issue and its current status:

- In 1979, the GGNRA Citizen's Advisory Commission developed and recommended a pet policy to GGNRA that established guidance for location and criteria for "voice control" of pets within certain areas of the park. The Commission's "voice control" policy did not and could not override NPS system-wide prohibition of pets off leash; nevertheless, in error, this unofficial "voice control" policy was in place within GGNRA for more than 20 years.
- Several recent events have underscored the need for undertaking a public process concerning pet management in GGNRA, including increased visitation to GGNRA, litigation concerning the Fort Funston area of the park, public concern about visitor and pet safety, park resource management issues involving wildlife and vegetation protection, and the review of dog-walking issues by the Golden Gate National Recreation Area Advisory Commission.
- The NPS service-wide pet regulation requiring pets to be leashed applies to this park as well as all others. GGNRA has no authority to avoid or ignore the regulation. Education efforts are underway with the public to clarify this issue.
- Some San Francisco dog organizations support the recreational benefits – for both dogs and humans – of off-leash dog walking.
- A recommendation is made by GGNRA to the Director of the NPS as to whether or not to initiate the rulemaking process to develop an alternative pet management regulation for GGNRA.
- The existing regulation will continue to be enforced unless it is replaced by a new regulation.
- If, through the ANPR (Advanced Notice of Proposed Rulemaking) process, the National Park Service determines that the existing pet regulation should be altered for GGNRA, then such a proposed regulation would be drafted in accordance with applicable laws, including the Administrative Procedures Act (APA), the National Environmental Policy Act (NEPA), and the National Historic Preservation Act (NHPA).

Equestrian Use

BARTC requested that the Trails Plan contain the possibility of equestrian use through special permits.

Response. Currently, equestrian use is not being considered within the Presidio, other than by the USPP for law enforcement. Within GGNRA, equestrian use is encouraged within other park units. Nothing would preclude reconsideration of

this issue in the future if there was sufficient interest and infrastructure to support an equestrian program. Impacts of such a program on cultural and natural resources would have to be evaluated.

Tennessee Hollow

Both CHC and FPPHA emphasized that including the Tennessee Hollow Corridor in the Trails Plan is premature, and the Trails Plan should be revised to be consistent with the status of the planning process for the Tennessee Hollow Watershed project. One individual agreed, urging that the corridor should be a separate process from the rest of the Trails Plan, and "new trail corridors that cross the… watershed, such as the Presidio Promenade, should be deferred as well."

Response. The PTMP specifically identifies restoration of Tennessee Hollow as a future action, stating that "Surface drainage and native riparian habitat will be restored along the three natural drainages in Tennessee Hollow, including El Polin Spring" (PTMP, page 19). The PTMP goes on to establish a policy framework for how this restoration will occur (refer to East Housing District: Concepts and Guidelines, beginning on pg. 100). While some commentors correctly note that the Trust is currently engaged in a public planning process to develop "on-the-ground" alternatives for Tennessee Hollow, the concept of its restoration has long been identified in plans for the Presidio, first in the GMPA and subsequently in the PTMP public planning and environmental review process. Therefore, the text in the Trails Plan, which indicates merely that there are "plans to restore" this area, has not been modified.

The Trails Plan shows that within the Tennessee Hollow watershed, there will be a trail that may include alignments within the eastern and/or central tributaries. The specific location and alignment of these trails will be determined as part of planning efforts for the Tennessee Hollow project and Trails Plan implementation. The general trail corridors are described in the Trails Plan in order to ensure trail network connectivity at the corridor level. This concept of connectivity can then be used to provide direction in the Tennessee Hollow planning process.

There appears to have been some confusion over the reference to "plans to restore" Tennessee Hollow. This is a technical term, with multiple meanings, depending on the context. The term "restoration" as used in the ecological context of the watershed differs from "restoration" as defined by the Secretary of the Interior's Standards in the cultural resources context. The term is used in the Trails Plan with its natural resource meaning to describe the ecological enhancement of the currently degraded creek corridor and watershed. Because the term "restoration" has a very specific and different meaning in the treatment of historic properties and cultural landscapes, the generic use of this term may have been misinterpreted by some readers. The intent of the Tennessee Hollow project is not to culturally "restore" the watershed and habitat to a particular time period, but rather to improve its ecological health and condition.

Greenwich Gate

The Cow Hollow Association (CHA) is concerned that any opening of the wall in the proposed Greenwich Street location could be later widened for a transit entry. The neighborhood association requested that any opening of the gate be the subject of a separate public process and a Trust Board resolution prohibiting future opening of the gate to transit. The neighborhood association also suggested moving the location of the wall opening about 15.2 to 30.5 m (50 to 100 ft) south.

Response. The Trust is currently planning to reestablish an opening in the wall at Greenwich Street for cyclists and pedestrians only, and does not support access by motor vehicles. The planned configuration cannot accommodate transit vehicles, and the opening is not intended

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for transit use. The location at Greenwich Street was selected because it was the historic location of a gate used by the streetcar; any other nearby location would not be appropriate. No additional public process is required, although the Trust will seek to keep interested parties informed regarding the status and implementation of the project. If at any time in the future a modification were proposed to allow transit access at the Greenwich Street location, the proposal would be subject to separate environmental review and public input. Such a modification is not supported by the Trust.

Trail Programs and Organized Bicycle Events

Several commentors requested that NPS and the Trust incorporate programs to provide better awareness of trails by creating or working with park partners with environmental education programs. One individual suggested that more opportunities for public support and participation should be offered with respect to the trail system. "[A]sk those who use it the most to help support, maintain and shape the future use of those trails." Another individual mentioned the possibility of a "Trail Users" group and indicated his interest in being involved or helping to organize such a group. One individual asked that the Trails Plan identify a paved loop for small organized bicycle events such as training races.

Response. The Trust and NPS are discussing a variety of possible initiatives with the Golden Gate National Parks Conservancy (GGNPC), including a future trails stewardship program. This would include education and trail maintenance opportunities for volunteers, in coordination with the existing Natural Resource Stewardship Program. This could include a "Trail Users" group as suggested. The Presidio has and will continue to accommodate various types of formal bicycle races; special use permits must be obtained for organized events. Informal recreational use of the Presidio's paved roadways is available to all bicyclists interested in training or racing. Specifics of races or events are not within the scope of the Trails Plan.

Future Public Input and Adjustments to Trails Plan

NAPP and PAR requested that the public be notified in advance and given an opportunity to provide input as implementation plans for specific trails are developed. They also note that the Trails Plan may need to be adjusted in future years to coordinate with future changes in the park. GGBHTD wished to continue its close working relationship with the Trust, NPS and other agencies in the Trails Plan planning process and be kept informed of trail changes in the vicinity of the Golden Gate Bridge.

Response. In general, the requirements of NEPA determine the specific process for public input, depending upon the potential effects of the proposed action. Projects that have the potential for causing significant environmental impacts not previously analyzed in the Trails Plan would trigger further public review and input. Much of the Trails Plan implementation will proceed directly from the Environmental Assessment prepared on the Trails Plan without further detailed environmental review. Other aspects of Trails Plan implementation may trigger additional environmental review and public input. Prior to implementation, specific measures will be reviewed for compliance with NHPA and other federal requirements. In addition, the public will be notified generally (e.g., through the Presidio Post newsletter or web site notices) or by targeted outreach before specific segments or improvements are implemented.

The Trust and NPS also recognize that the Trails Plan may need to be adjusted as time goes by. Material adjustments or changes to the Trails Plan, the effects of which are uncertain or potentially significant, would be subject to further environmental and public review.

The Trust and NPS will continue to work closely with GGBHTD on planning and trail changes in the vicinity of the Golden Gate Bridge.

Environmental Consequences

One individual asserted that the No Action Alternative would, over time, cause significant impairment and degradation of the park's natural resources, and should be rejected. The same individual suggested that the Trails Plan address the impacts of fencing trails, and another implored "[s]igns not fences – which keep people from enjoying the vista… and create a jail-like feeling." On the subject of fences, yet another suggested a "sunset provision" whereby the fences are eventually taken down.

Response. The description of the No Action Alternative states that no comprehensive changes or major new trail building would take place. Under this alternative, trail rehabilitation and repair would only occur as needed to protect resources and public health and safety, and to meet statutory requirements. Thus, while certain impacts would occur as discussed under each impact topic in Chapter 5, the impairment of park resources and values would not be allowed. Nonetheless, the No Action Alternative is not being selected for implementation because it does not fulfill the goals in the GMPA and the PTMP to establish a comprehensive walking and biking network in the park.

With regard to the issue of fences, NPS and the Trust agree with the commentors that the practice of fencing to protect natural resources is not necessarily the ideal solution. Fences within the park will be limited to these necessary to protect park resources and meet park management needs. Meanwhile, NPS and the Trust will attempt to find better solutions to fencing (including signage and vegetative buffers) in order to preserve the natural resources in their care while providing a high-quality visitor experience. In the limited circumstances where fences may be necessary, once the objective of the fencing has been accomplished, the physical barrier will be removed, subject to a determination that the removal would not lead to unanticipated and unacceptable impacts to park resources or values.

Changes to the Preferred Alternative

A number of commentors suggested that the Trails Plan identify a different Preferred Alternative or incorporate elements of the various alternatives. BARTC, for example, preferred Alternative C because it provided more opportunities for multi-use/dispersed use than the other alternatives.

Response. In responding to specific suggestions from the public comments, NPS and the Trust made several changes to the Trails Plan, including modifications to the Preferred Alternative. The changes include added trail connections, changes from pedestrian to multi-use paths and vice versa, and narrowing of some multi-use paths, along with other modifications. These changes are explained further below and summarized at the beginning of Chapter 1 of the Trails Plan. The Preferred Alternative remains, however, the alternative that provides the best balance between pedestrian, bicycle and multi-use trails, and the other goals of the Trails Plan.

Bay Area Ridge Trail. Various commentors made suggestions for modifications to the Bay Area Ridge Trail. One commentor requested bike lanes on each side of Arguello Boulevard and Washington Boulevard from the Arguello Gate to Lincoln Boulevard, and on Lincoln Boulevard itself. One commentor requested that Washington Boulevard be made a Class III bike lane for its entire length.

The BARTC supports pedestrian only paths from Nauman Road to the cemetery to Park Boulevard, and behind Battery Boutelle. The BARTC also made a number of other suggestions, both by letter and at the public hearing, including recommending that the Bay Area Ridge Trail continue as a multi-use corridor through Rob Hill, rather than routing through Battery McKinnon-Stotsenberg; routing the multi-use path through Fort Scott in front of the western barracks rather than routing the bikeway behind the barracks on

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Ralston; creating better access to the Golden Gate Bridge toll plaza; realigning the trail at Kobbe Avenue for a more direct connection to Fort Scott; and keeping the Bay Area Ridge Trail along the west side of Lincoln Boulevard south to the parking lot at Battery Godfrey rather than creating a sidewalk on Merchant Road.

Response. In response to comments, several modifications to the Bay Area Ridge Trail alignment have been made in the Preferred Alternative. The Preferred Alternative already stated that all of Washington Boulevard will have Class II striped bike lanes. Class III is a shared roadway, not a bike lane. In addition, the existing crossing of Washington Boulevard will be moved slightly west, and a new multi-use segment adjacent to Washington Boulevard, to Nauman Road and connecting to Amatury Loop is provided. Changes also include a new pedestrian crossing at Park Boulevard and a new multiuse trail connection in the forest from Park Boulevard to Battery McKinnon-Stotsenberg.

As requested by the BARTC, there will be pedestrian-only paths from Nauman Road to San Francisco National Cemetery to Park Boulevard, and behind Battery Boutelle. The Bay Area Ridge Trail segment through Rob Hill Campground will remain as a multi-use trail, adding a new pedestrian spur from north of Building 1347 to the east of Building 1202 in Fort Scott, and changing the alignment of the multi-use trail to connect the Harrison Boulevard/Kobbe Avenue intersection to Ralston Avenue, as well as a contra-flow bike lane on Greenough Avenue, skirting Building 1340. With regard to connections to the Golden Gate Bridge, see the response to comments under the Golden Gate Bridge below.

The bicycle route will not be routed in front of the Fort Scott barracks, as requested, as the historically significant inner loop is anticipated to be maintained primarily as a pedestrian area.

Batteries and Bluffs Trail. The FPPHA requested that a trail spur be added from the Bay Area Ridge Trail south down Battery Caulfield Road then east up the hill to the former Nike Missile site.

Response. In response to comments, a spur trail has been added from the trail on Battery Caulfield Road to the former Nike Missile site, which is not considered a contributing feature to the National Historic Landmark District, but does adjoin California Quail habitat.

Bay Trail. SFBT and NPCA, as well as several individuals (including speakers at the public hearing), suggested changes to the Bay Trail, including incorporating a multi-use trail or a bike lane on the south side of the West Bluff parking lot; creating a multi-use trail from the top of Long Avenue to the Battery East parking lot; and providing traffic calming measures on Long Avenue.

Response. NPS and the Trust are planning to implement improvements to the San Francisco Bay Trail within the Presidio. They are currently working with GGBHTD on improvements to the connection from Crissy Field to the Golden Gate Bridge. This project (Bay Trail Study) is sponsored by SFBT, through the Association of Bay Area Governments (ABAG).

In response to the comments, the segment between Crissy Field and the Golden Gate Bridge will be improved for pedestrians and cyclists. A dedicated Class I bike lane is proposed along the outside of the West Bluff parking lot near the Warming Hut. An uphill bike lane is proposed along Long Avenue, which would connect to the proposed bike lanes and multi-use path along Lincoln Boulevard (the Presidio Promenade). The San Francisco Bay Trail route includes the current steps and pedestrian path that connect Marine Drive at Building 989 with Battery East and Battery East Road. This is a non-accessible route to the Golden Gate Bridge, so a key planning goal is to provide an accessible route from Crissy Field to the Golden Gate Bridge. An accessible path will be provided along Long Avenue that will

connect with the multi-use Presidio Promenade and the accessible pedestrian route to Battery East on Andrews Road. These two segments, along with Battery East Road, will provide an accessible loop trail through Battery East for those visiting the bridge. Users would access the Golden Gate Bridge and the bridge plaza via the multi-use Presidio Promenade along Battery East Road. The road, which allows only service vehicles, would be striped for bicycles in each direction, with a pathway marked for pedestrians.

California Coastal Trail. Various commentors, including NAPP, PAR, and the Lake Street Resident's Association (LSRA), as well as commentors at the public hearing, suggested changes to the California Coastal Trail alignment. These included adding a secondary pedestrian trail extending the Batteries and Bluffs Corridor west of and removed from Lincoln Boulevard, to connect Battery Crosby directly with the sand ladder off Baker Beach just above the steep section of the ladder. Other suggestions included improving the section of Lincoln Boulevard for cyclists, from the intersection of Merchant Road south to the vista point at Washington Boulevard (or providing an interim measure); creating a continuous, off-road trail between the Golden Gate Bridge and Baker Beach, along the bluff above North Baker Beach and through the Fill Site 5 renovation area; and retaining the social trail west of the guardrail along the California Coastal Trail as a pedestrian-only trail and developing a separate multi-use trail. One commentor suggested creating a multi-use trail from Merchant at Battery Boutelle to the Golden Gate Bridge, with a pedestrian trail adjacent to it.

Response. Many commentors' suggestions have been incorporated into the Trails Plan. The California Coastal Trail corridor has been modified to include a pedestrian-only connection from Battery Crosby, above remediation site Baker Beach DA3, and then down the sand ladder and across the beach. This trail will be planned in conjunction with the planning for management of the remediation site. The Preferred Alternative will continue to include Class II bike lanes on Lincoln Boulevard, as requested. The trail adjacent to the guard rail will continue as a multi-use trail, not a pedestrian trail, as requested; however, the multi-use trail will be narrower than originally proposed (1.8 m [6 ft] wide rather than 2.4 m [8 ft]). In addition, the trail connection at Storey Avenue and Merchant Road will be improved, as will the trail crossing near the entrance to Building 1750. Merchant Avenue from Battery Boutelle to the Golden Gate Bridge is also currently designated in the Preferred Alternative as a multi-use trail, which will accommodate both bicyclists and pedestrians. In trail guides, the beach trail will be marked to indicate that it is not useable during high tides. This will create a continuous pedestrian corridor away from Lincoln Boulevard between the Golden Gate Bridge and the 25th Street Gate, as suggested by commentors.

Lovers Lane. PHAN and one other commentor suggested that Lovers Lane is inappropriate for bicycle use.

Response. Lovers Lane is currently a pedestrian only trail, and is retained as such in the Preferred Alternative. This historic trail corridor is not appropriate for bicycle use.

Park Boulevard. One commentor suggested that Park Boulevard should be Class II bike lanes only in the uphill direction from Lincoln Boulevard to Washington Boulevard. One commentor at the public hearing observed that the Park Boulevard trail through the Presidio Golf Course is often closed earlier than dusk as signed.

Response. Park Boulevard is one of the less steep connections from the south to the north side of the park. The steeper routes, such as Presidio Boulevard and Arguello Boulevard will have uphill bike lanes with cyclists entitled to share or take the full lane in the downhill direction. Park Boulevard is in a less urban environment than

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Arguello Boulevard and Presidio Boulevard. For these reasons, Park Boulevard is expected to have a greater number of inexperienced and/or recreational cyclists than some of the steeper north-south routes. The Trust and NPS believe that bike lanes should be provided on both sides of Park Boulevard because of the less experienced cyclists expected to use this corridor. The Presidio Golf Course section of the trail is, by contract, to be open until dusk. Enforcement is the responsibility of the Trust's management consultants.

Presidio Promenade. RTC requested improvements to the bike lanes on Lincoln Boulevard southwest of the Golden Gate Bridge. SFBC suggested that there should be dashed bike lanes along Lincoln Boulevard as it passes Long Avenue. One other commentor suggested providing improvements to Lincoln Boulevard between the 25th Avenue Gate and Crissy Field Avenue: "[p]ossibly use a double stripe, solid on the motor lane side, dashed on the bike lane side, to signal cars that they may not drive in the bike lane but that bicycles can have full use of lane."

Response. The Preferred Alternative provides for bike lanes within most of the referenced corridor. Improvements to the wide intersection of Long Avenue/Lincoln Boulevard are being considered as part of an ongoing study to improve the connection for the San Francisco Bay Trail from the Crissy Promenade to the Golden Gate Bridge plaza. Current proposed improvements include narrowing this intersection, which will minimize the distance cyclists are in the intersection. Dashed bike lanes at this and other similar intersections will be considered as part of implementation planning. The striping suggested is a non-standard striping, and because it is familiar to neither drivers nor cyclists, could be confusing and unsafe. The California Vehicle Code describes permitted movements from bicycle lanes. In localized narrow areas where bike lanes may not be feasible in both directions, the bike lane would be maintained in the uphill direction and bicyclists would be allowed use of the full lane in the downhill direction. In these cases, signage would indicate to motorists and cyclists that the bike lane has ended and cyclists are allowed use of the full lane.

Tennessee Hollow. Various commentors, including PHAN and FPPHA, supported creating a trail from Julius Kahn Playground to Crissy Field.

Response. The Preferred Alternative includes a trail corridor from Julius Kahn Playground to Crissy Field, with one or two possible trail alignments: the eastern tributary of Tennessee Hollow (going by Paul Goode Field and Morton Street Field); or the central tributary, following MacArthur Avenue. The Trails Plan establishes the general location of this corridor; the specific location of the trail alignments will be developed in conjunction with Tennessee Hollow planning.

West Pacific/Mountain Lake Corridor. NAPP, PAR, PHAN, SFBC and several individuals made suggestions for the West Pacific Avenue corridor. Suggestions included creating separate bicycle and pedestrian trails; not redesignating the pedestrian trail as a multi-purpose trail; and encouraging bicycles to use Pacific Avenue rather than converting the trail to a multi-use trail.

Response. The Preferred Alternative has been revised to reflect that the trail immediately adjacent to West Pacific Avenue to the south would be a pedestrian-only trail, and the trail crossing through the center of the Pacific Grove, farther north, would be a multi-use trail. This trail would start from the Broadway Gate, extend just southward of the new tree plantings in Pacific Grove, connect with the existing trail south of Paul Goode Field, and then continue through the eucalyptus grove to connect with Quarry Road and the Arguello Gate. This change would decrease bicycle traffic around the entrance to Julius Kahn Playground, which is used by many families with young children. It also provides an appealing cross-park off-road connection for cyclists via a wooded multi-use trail.

Other Corridors. FPPHA suggested an additional loop trail, creating a double loop through the Main Post. The proposed trail would allow visitors to enjoy the historic character of the Main Post. One individual suggested a new east-west trail corridor, created by connecting a section of the West Pacific Trail to the Bay Area Ridge Trail.

Response. In response to the request for an additional loop trail within the Main Post, the Trust and NPS are cooperating to develop interpretation for the entire Presidio, including the Main Post. Most of the described loop uses existing sidewalks and roadways. Specific sidewalk routes are not being designated as trails within the Trails Plan. Development of a guide to the historic Main Post, using the route suggested, is compatible with the goals of the Trails Plan. The new east-west trail corridor has not been added because an east-west multi-use trail corridor is already provided by the eastern part of the West Pacific/Mountain Lake corridor (as described above) and the Bay Area Ridge Trail. This will create an accessible cross-park connection for pedestrians and bicyclists.

Golden Gate Bridge. Numerous commentors suggested improvements to Golden Gate Bridge trail connections. Suggestions included developing a shoulder improvement or a bike lane on the uphill section of Merchant Avenue from the bridge; providing a better connection from the Merchant intersection to the west side of the bridge; creating access through the western section of the GGBHTD's parking lot; routing a multi-use trail north of Battery East parking lot; providing bike and pedestrian separation on the bridge approach and descent (as in Alternative D); routing a multi-use trail along the existing Coastal Trail between Battery Boutelle and the southwest bicycle entrance to the bridge; and restructuring the bicycle exit off the west end of the bridge to be a smooth curve.

Response. Several of the commentors' suggestions have been incorporated into the Trails Plan. Specifically, the Trails Plan provides a multi-use trail connection and bike route extending from the bridge south near Battery Cranston in the vicinity of the GGBHTD maintenance yard and parking area. The exact route and design of this highly desired bike access to the west side of the bridge will be further studied during future NPS and GGBHTD implementation planning.

In response to requests for improvements on Merchant Avenue, the road is proposed to have a striped Class II in-street bike lane on each side of the street. A pedestrian walkway is proposed along the west side of Merchant Avenue, which will connect to the trailhead for the California Coastal Trail, the Bay Area Ridge Trail and the De Anza Trail (all on the same alignment) located on the east side of Battery Boutelle. The road east of Batteries Boutelle, Godfrey and Marcus Miller (Bowman Road) will be further developed as a multi-use trail.

To address conflicts between cyclists and pedestrians where the regional trails come together and pass under the bridge to reach the west walkway of the bridge and the coastal trails, the trail under the bridge will have separately marked bike lanes and pedestrian lanes as an extension of the Battery East Road trail segment. Where pedestrians need to cross the bike lanes, signs and striped pedestrian crossings are proposed to alert both user groups to the need for care. The pedestrian segment is proposed to be an accessible route to a small overlook on the west side of the bridge, which will mark the start of a pedestrian-only, non-accessible portion of the California Coastal Trail, the Bay Area Ridge Trail and the De Anza Trail (all on the same alignment).

Baker Beach Access. NAPP and PAR both recommended constructing a secondary pedestrian trail from Battery Marcus Miller to the northernmost section of Baker Beach.

Response. The Preferred Alternative has been revised to include a pedestrian trail that will provide access to the northern beaches from the

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California Coastal Trail near Battery Marcus Miller. The trail alignment and surfacing will be determined during implementation planning, and may require additional consultation with the U.S. Fish and Wildlife Service. Structures such as stairs and railings are anticipated, along with possible seasonal closures for wet soil conditions.

Presidio Boulevard Uphill Bike Lanes. One commentor requested that bicycles have the full use of the lane on Presidio Boulevard from the Presidio Gate to the Lombard stop sign. (The Preferred Alternative shows bike lanes on both sides of Presidio Boulevard between lower Simonds Loop and Lombard Street.)

Response. The Preferred Alternative has been revised to include a bike lane only in the uphill direction on Presidio Boulevard between the Presidio Gate and Lombard Street. Cyclists are entitled to the full use of the lane in the downhill direction and signage will indicate this.

Washington/Lincoln Trail Connection North of Baker Beach Housing. Three organizations, LSRA, NAPP and PAR, recommended that a connection be created between Washington Boulevard and Lincoln Boulevard in the area west of Rob Hill.

Response. Several existing deep, highly eroded social trails extend from the existing overlook on Washington Boulevard down to Lincoln Boulevard. In response to the comments, a trail will be maintained in the vicinity, providing a connector until the removal of Baker Beach Apartments provides the opportunity to create a better corridor to the west, using the general alignment of existing roads through the residential neighborhood.

Battery Caulfield Road. Various commentors remarked on the steep section of Battery Caulfield Road. LSRA requested an extension of the sidewalk on the west side of Battery Caulfield Road/Wedemeyer Street up to the Washington Boulevard intersection. NAPP and PAR both recommended allowing cyclists uphill only on the steep sections of the multi-use trail on the west side of Battery Caulfield Road. They also recommended interim measures if the trail improvements cannot be implemented soon.

Response. The trail adjacent to Battery Caulfield Road has been changed from a multi-use trail to a pedestrian trail (on the sidewalk) and an uphill bike lane. Cyclists in the downhill direction will have use of the full lane. Because of natural resource values on both sides of the roadway, minimizing the amount of impervious surface for the trail corridor is preferable. In addition, the Trust agrees that the steepness might lead to user conflicts on a multi-use trail, so having bicycles in an on-road bike lane rather than in a multi-use trail for this section will remove the possibility of conflict.

Crissy Marsh Extension to Battery Blaney Overlook. NAPP requested the addition of a secondary trail extending southwest from the southwest corner of Crissy Marsh past the former Commissary to the overlook north of Doyle Drive.

Response. To implement the suggested revision, this trail would need to go down a steep slope which is in an erosion control project associated with Doyle Drive. This trail connection is included in the Preferred Alternative, but will be implemented in conjunction with the Doyle Drive project.

Intersections. Various commentors requested intersection improvements. BARTC requested realignment of the Bay Area Ridge Trail to the new stop-controlled Lincoln Avenue and Merchant Avenue intersection. NPCA and several individuals requested improvements for bike safety at the Lincoln Boulevard, Washington Boulevard and Kobbe Avenue triangle section. SFBC requested improvements to the intersection of Long Avenue including asphalt removal and installation of bulb outs at the entrance to Long Avenue. NPCA requested provision of bike lanes, lighting and signaling at the intersection of

Lombard and Presidio Boulevards. SFBC requested that a stop sign be added at the corner of Lincoln Boulevard and Sheridan Avenue. They also recommended that a left turn lane and center island be added on Merchant Road at the entrance to the new pathway on Battery Boutelle.

Response. Most of the commentors' suggestions are being addressed in this or other planning processes. The Preferred Alternative incorporates BARTC's suggestion that the Bay Area Ridge Trail be realigned to the new stop-controlled intersection of Lincoln Boulevard and Merchant Road. The Trust has plans to improve the Lincoln Avenue, Washington Avenue and Kobbe Avenue intersection by increasing the size of the triangular traffic island at Lincoln Boulevard and Kobbe Avenue, which will improve visibility for westbound motorists on Kobbe Avenue and create a narrower travel lane for vehicular traffic in this area. The larger traffic island will provide adequate width for the bike lanes proposed in the Trails Plan and help to slow traffic on Lincoln Boulevard, thus improving bicyclist safety.

Improvements to the connection between Crissy Field and Lincoln Boulevard via Crissy Field Avenue and/or Long Avenue are being considered as part of the Bay Trail Study. The Preferred Alternative has been modified to reflect a proposal to close Crissy Field Avenue to automobile traffic, and provide a two-way multi-use connection between Crissy Field and Lincoln Boulevard, subject to further review and approval. Specific improvements to the intersection of Long Avenue and Lincoln Boulevard will be considered as part of the Bay Trail Study and subsequent implementation planning for those improvements. The commentors' suggested improvements to Long Avenue are current preliminary recommendations of the Bay Trail Study.

As described in the PTMP Environmental Impact Statement, it is expected that increased traffic congestion will warrant traffic signals and/or other improvements at several intersections in and near the park, including the intersection of Presidio and Lombard, within a 20-year planning horizon. The Trust and NPS will consider and study further the needs of pedestrians and bicyclists in signalization or other intersection improvements. Neither a left turn lane nor a center island is designated for Merchant Road as part of the Trails Plan; nevertheless, these improvements will be considered as part of future traffic planning.

Trailheads. One individual requested trailhead parking areas at several locations, including parking areas at Pop Hicks Field, Julius Kahn Playground, and Paul Goode Field for access to trails and overlooks.

Response. Some trailhead parking will be provided at all primary trailheads, and some secondary trailheads, as discussed in Chapter 3. Parking will continue to be provided at the suggested locations.

Road Closures. Several commentors, including MCBC and NPCA, recommended weekend closures to automobile traffic on Washington Boulevard. Other commentors, including SFBC, also suggested that Washington Boulevard be converted to a non-through street for autos. Numerous commentors requested a better connection from the west end of Crissy Field to the Golden Gate Bridge, particularly for bicycles. Suggestions included creating a contra flow bike lane on Crissy Field Avenue, closing Crissy Field Avenue to auto traffic, and closing Long Avenue to auto traffic. SFBT also asked the Trust and NPS to consider closing Marine Drive to all auto traffic except shuttles, to give pedestrians and bicycles better access to Fort Point.

Response. The Preferred Alternative has been modified to reflect a proposal to close Crissy Field Avenue to automobile traffic, to provide a two-way multi-use connection from Crissy Field and

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Mason Street up to Lincoln Boulevard and the Golden Gate Bridge. This closure is subject to further Trust review and approval. Temporary or weekend closures of Washington Boulevard are proposed in the Preferred Alternative; however, the impacts of a road closure of this type would require additional analysis. Temporary or weekend closures of Marine Drive are under consideration by the NPS and the Trust.

Miscellaneous Suggestions

MCBC recommended using bioswales as a component of buffers to "meet requirements of Storm Water Pollution Prevention plan." The group also suggested use of narrow gutter pans for new construction to extend usable roadway width for bicyclists. BARTC requested that the Fort Scott Parade Ground be considered an overlook.

Response. The Trails Plan assumes use of the most sustainable trail construction techniques available. These techniques will change over time as new and better materials and techniques become known. In response to the comment, two best management practices (BMPs) have been added to Appendix C of the Trails Plan describing bioswales, where feasible, and narrower gutter pans.

The Fort Scott Parade Ground provides a scenic vista of the Golden Gate Bridge and the Marin Headlands. It is not listed in the Trails Plan as an overlook because, depending on the future use of Fort Scott, it may not provide all the characteristics of an overlook.

APPENDIX C. BEST MANAGEMENT PRACTICES

This appendix provides a detailed description of the Best Management Practices (BMPs) described in Chapter 3. The BMPs are divided into 12 general categories:

1) Drainage Control
2) Trails in Wet Areas
3) Trails on Steep Cross Slopes
4) Trails on Flat Grades
5) Eroding and Hazardous Trail Edges
6) Trails on Sandy Soils
7) Trails Damaged by Vehicle Use
8) Bicycle Safety Improvements
9) Social Trails Requiring Closure
10) Trails in Proximity to Sensitive Resources
11) Air Quality
12) Natural Resource Conservation

1. Drainage Control

Trails in hilly terrain are particularly subject to erosion caused by water movement. Design and construction errors can allow water to build up volume and velocity, which often causes trail damage. There are several basic design strategies to improve drainage control, such as using alignments perpendicular to sheetflow direction and full or half bench construction. Figure C-1 illustrates a typical location of existing, non-accessible drainage control measures.

Figure C-1. *Typical Location: Existing Drainage Control*

1-1 Outsloping

Outsloping is slightly elevating the uphill edge of a trail. It encourages water to flow across the trail surface and reduces the potential for erosion. All proposed trail designs include outsloping. Full bench construction provides a more stable trail bed (Figure C-2). Where cross slopes are not steep (generally less than 30 percent), half bench construction may be used.

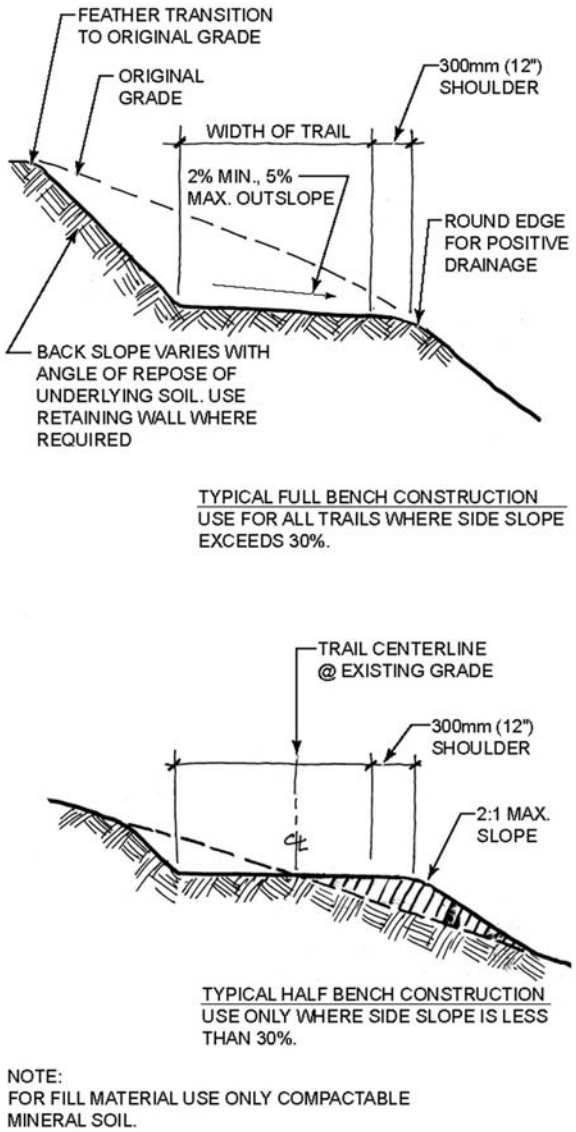

Figure C-2. *Outsloping (BMP 1-1)*

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1-2 Rolling Grade Dips

Rolling grade dips are short sections of trail that channel water off the trail surface. Grade dips work best on trails with slow, steady grades and are best placed at naturally occurring drainage-ways (Figure C-3). Typically, trails are outsloped more at the point of the grade dip to provide better drainage. Grade dip backslopes should be about 1.2 to 1.8 m (4 to 6 ft) long to eliminate abrupt grade changes that may be barriers to access. For this reason, dips are preferable to both waterbars and open culverts. They typically require less maintenance than covered culverts, which can easily become clogged with leaves or other debris.

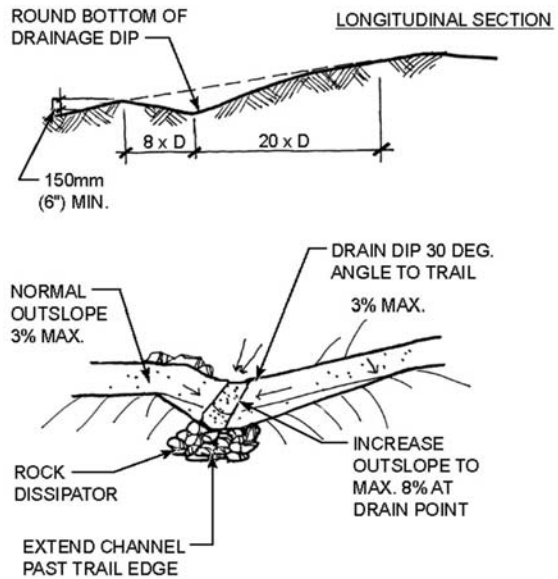

Figure C-3. *Rolling Grade Dip (BMP 1-2)*

2. Trails in Wet Areas

Trails in the proximity of areas with seasonal or permanent soft and water-saturated soils pose problems for visitor enjoyment and for resource protection and maintenance.

Trail users often walk to trail sides to avoid wet patches, and that can cause destruction of adjacent vegetation and surface soil horizons. However, relocating these trails to higher or drier ground may not be the answer if the existing trail provides special benefits to users or if rerouting the trail would disturb sensitive habitat areas. Providing a hardened trail surface in the current trail alignment may be the best choice. Techniques that allow access for users with disabilities are preferred.

2-1 Surface Reinforcing

Placing flat stones or cobbles on the trail surface, in combination with geotextile or sheet drain materials, is an aesthetically pleasing way to provide a stable trail surface in wet areas. Since water can pass through the entire structure, this solution offers the additional advantage of only minimally disrupting existing drainage patterns (Figure C-4). Another alternative is a short, concrete-paved section that would be more accessible for people using wheelchairs.

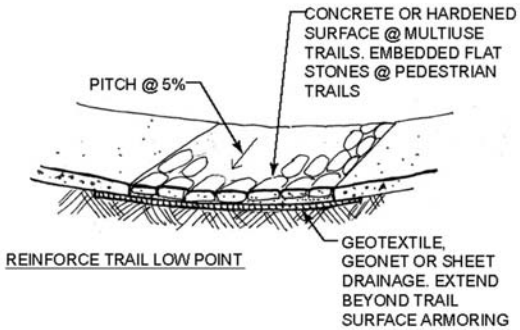

Figure C-4. *Surface Reinforcing (BMP 2-1)*

2-2 Boardwalk Bridge

Trail structures such as bridges help maintain drainage patterns. They can be constructed of timber or recycled plastic lumber (Figure C-5). To maximize accessibility for people with disabilities, bridge entrances and exits should be at grade rather than elevated or ramped. Additional maintenance might be required to ensure that surfaces that adjoin the entrances and exits do not vary more than 50 mm (2 in) from the bridge surface.

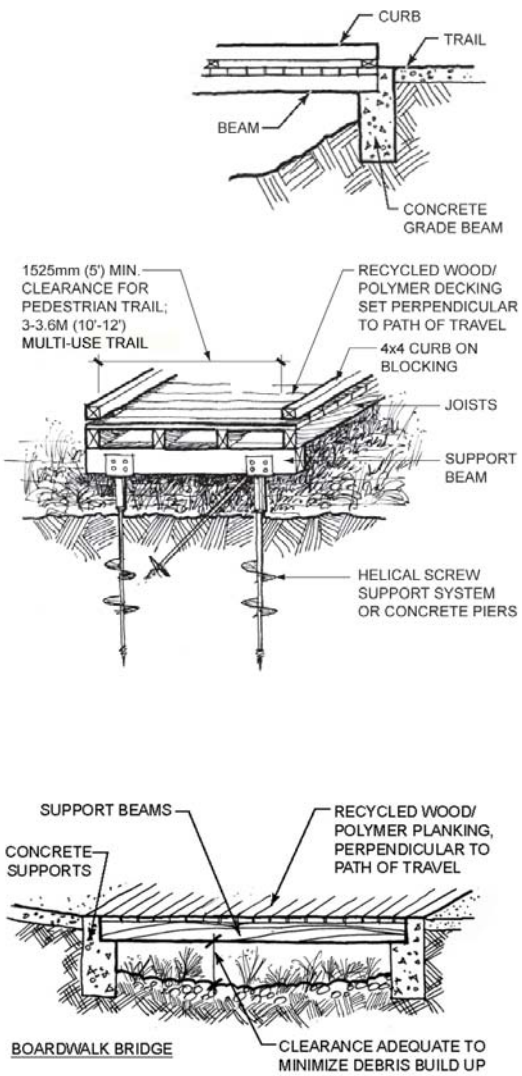

Figure C-5. *Boardwalk Bridge (BMP 2-2)*

2-3 Drainage Lens

The low-volume water flow caused by ephemeral springs or seeps can often be managed with a drainage lens (Figure C-6). The area beneath the trailbed should be filled with progressively smaller quarry rock and then capped with fine aggregate or suitable native fill. Sandwiching the rock lens between two layers of geotextile material would provide a more stable base, and would prevent rock from mixing with surrounding soils.

3. Trails on Steep Cross Slopes

As illustrated in Figure C-7, steep slopes present many challenges for safe and sensitive trail design. Trail cuts on steep slopes increase the visual impact and the area of disturbance and often require special measures to stabilize the slope, such as slope protection or retaining walls. In some cases, stairways may also be needed. Trail structures and retaining walls, when required, should be designed to minimize impact on natural and cultural resources and should use materials appropriate to the area's landscape management zone.

3-1 Area Avoidance and Trail Relocation

When possible, avoid locating trails on steep slopes. Where trails must cross a steep slope, consider a minimum width trail.

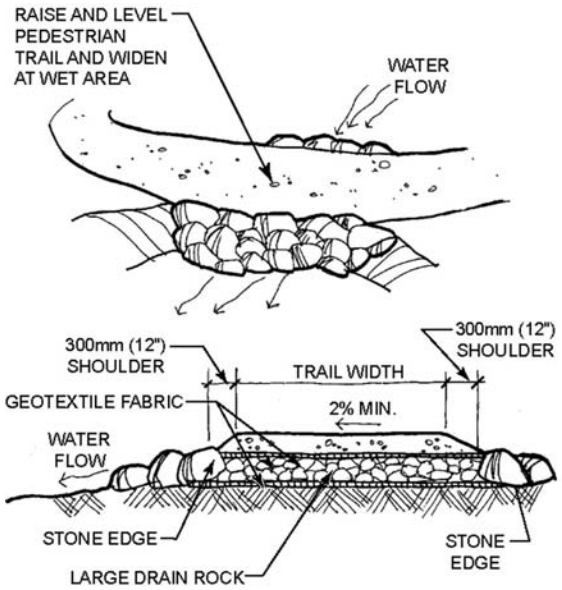

Figure C-6. *Drainage Lens (BMP 2-3)*

Figure C-7. *Typical Location: Steep Slopes*

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

3-2 Reinforced Backslope or Retaining Wall

Depending on soil type, backslope cuts into hillsides may need protection in order to prevent severe erosion and slope destabilization. Table C-1 illustrates typical backslope cut ratios. Backslope reinforcing and protection can be provided by a permanent structure or by temporary measures during revegetation.

Retaining devices may be as simple as a log curb, or they may need to be designed by a structural engineer. Retaining materials may be poured-in-place or precast concrete segments, stones or timber from vegetation management practices, depending on the landscape management zone. Figure C-8 illustrates the features of a typical retaining wall. All retaining structures must allow water to drain around or through the wall and not accumulate behind it. Stepped-back wall construction may provide opportunities for more planting. Green wall systems (a structure permeated by plantings) may be an acceptable alternative to retaining walls in some areas of the Presidio. Ongoing maintenance, including repair, replacement and removal of broken or detached components, must be provided for all retaining structures.

Soil Type	Ratio (horizontal to vertical)
Sand	3 or 4:1
Moist clay	2 or 3:1
Loose, gravelly soil	1.5 or 2:1
Loose rock	0.5:1
Stable rock	0.25:1

Source: Rathke and Baughman 1987

Table C-1. *Backslope Cut Ratios*

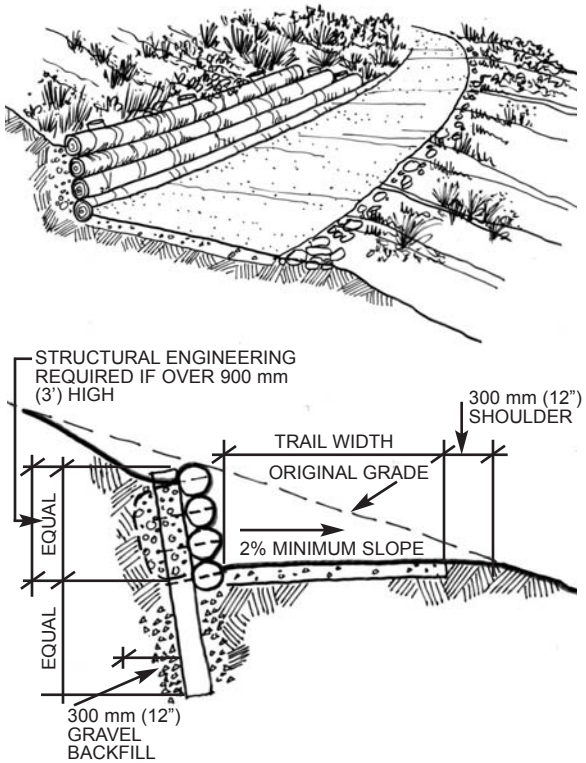

Figure C-8. *Retaining Wall (BMP 3-2)*

3-3 Trail Structure

Boardwalks, stairways, and decks may be used where standard cut-and-fill techniques are inappropriate (Figure C-9). For example, on steep trails on sandy or loose soils, stairways are recommended to avoid excessive erosion. Steel deck structures would allow light to penetrate to the vegetation below and reduce impacts on habitats sensitive to light.

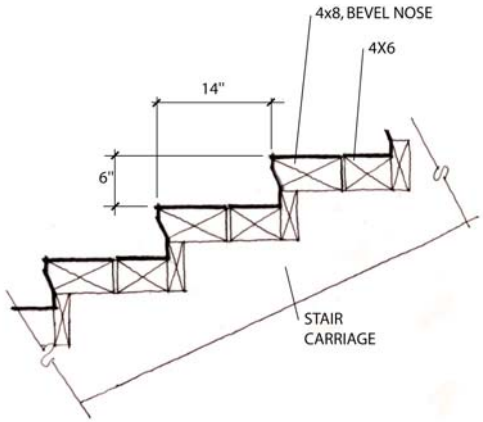

Figure C-9. *Trail Stairs (BMP 3-3)*

4. Trails on Flat Grades

Since trails exist in dynamic environments, it is not possible to keep them clean and dry – especially when they're on primarily level terrain. Without proper drainage, trails on level ground tend to pond and collect debris, creating obstacles for all users. This creates a cycle that further degrades the

trail and surrounding lands. Proper trail design can help mitigate this problem. There are several approaches for providing good drainage. The goal in all cases is to maintain a firm, stable, slip-resistant surface that is free of ponding.

4-1 Above Grade Trail

One technique is to elevate a trail slightly, about 75 mm to 150 mm (3 in to 6 in), and provide drainage swales on each side (Figure C-10). Using a gravel bed to elevate the trail would provide additional subsurface drainage. Raised trails are often used in conjunction with drainage lenses to facilitate water movement. An elevated trail offers a more convenient pathway for users during wet periods, provides the greatest degree of accessibility for persons with disabilities, and may require less maintenance.

4-2 Boardwalks

This approach, described in BMP 10-2, Trails in Proximity to Sensitive Resources, also provides an accessible trail surface. Boardwalks are often the most appropriate solution on erodible soils, such as sand or other loose, uncompacted soil.

5. Eroding and Hazardous Trail Edges

Edge protection has two purposes: to protect the trail and adjacent resources, and to protect the user.

Clearly defined edges help keep users of all types on the established trail surface and help protect resources. Properly constructed edges also protect trails from water damage and erosion. Figure C-11 illustrates typical eroding and hazardous trail edges.

Edge protection can also increase trail safety for various user groups. For example, a raised curb at least 75 mm (3 in) high or a guardrail may help a person using a wheelchair keep on track. However, some types of edge protection may be hazardous for bicyclists.

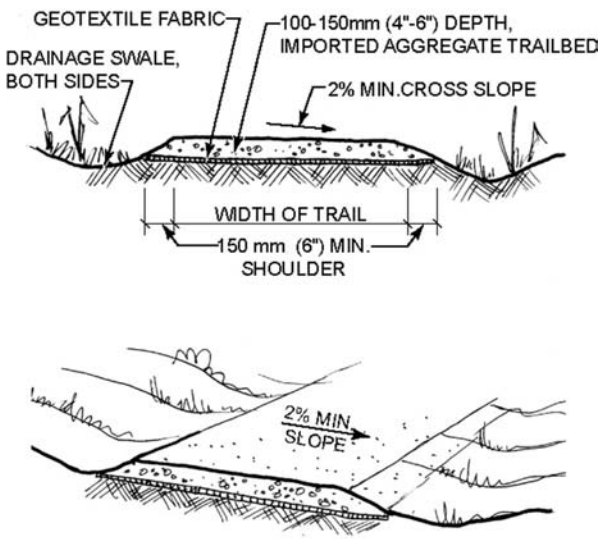

Figure C-10. *Above Grade Trail (BMP 4-1)*

5-1 Edge Stabilization

Edge protection is sometimes required to stabilize the trail structure, and prevent erosion of edges and eventual undermining of the trail base. Reinforcement of both sides of the trailbed can improve long term sustainability. Soft surfaces such as those proposed for walking or jogging on the edges of multi-use trails generally require full-depth edge protection to prevent breakdown of trail edges.

Figure C-11. *Typical Location: Eroding and Hazardous Trail Edges*

Since Presidio trails pass through many different environments, including sensitive natural habitat or historically significant landscapes, edge protection should be consistent with the setting. Trails requiring edge protection in the VMP Landscape Management Zone or in areas of high use and urban character might use more traditional materials such as curbs, manufactured or cut stones, and railings. In other VMP zones, edge protection could be provided by native materials, including plants, salvaged logs (from vegetation management practices), or natural stones (Figure C-12). It must be installed to facilitate water flow across the trail, and openings must be adequate to allow organic material to pass through them.

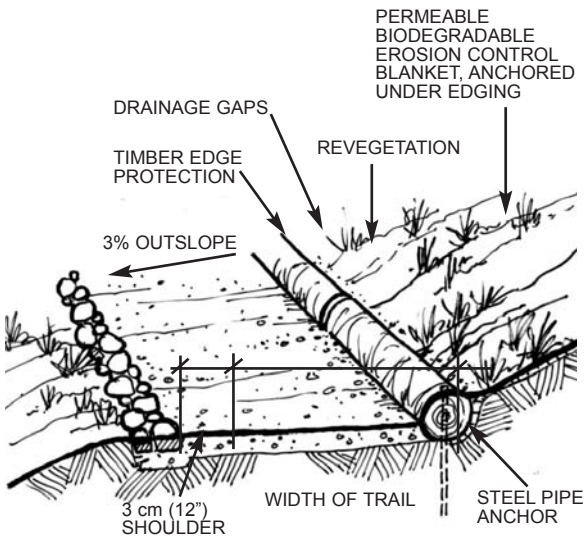

Figure C-12. *Edge Protection: Trail Setting (BMP 5-1)*

5-2 Edge Safety

Trail edge safety provisions are sometimes required and must be appropriate to the trail user group and the setting. On multi-use trails, edge protection and barriers must be designed for bicycle safety. For example, a raised curb that might aid a wheelchair user should not be located immediately adjacent to a bicycle way or paved portion of a multi-use trail, unless the trail is widened to provide buffers. All vertical structures such as curbs and railings should be set back a minimum of 0.6 m (2 ft) from the bicycle way.

Where required for trail user safety immediately adjacent to a steep drop off, safety railings with a height of 1.1 m (42 in) should be provided. However, because railings can be a visual intrusion in a natural setting, they should be used only when there is no other alternative.

5-3 Reducing Hazards at Drop-offs

An effective strategy for reducing hazardous conditions on hillside trails (with or without additional edge protection) is to widen the trail and plant vegetation at the trail's edge.

6. Trails on Sandy Soils

Maintaining a stable trail surface can be particularly challenging in areas with sandy soils (Figure C-13). Solutions depend on factors such as the relative sensitivity of the surrounding habitat, continuing maintenance costs, accessibility requirements, and issues specific to each landscape management zone.

Figure C-13. *Trail in Sandy Soil*

6-1 Subsurface Geogrids

Geogrids or geocells, when used in combination with geotextiles, provide a relatively unobtrusive means of stabilizing sandy trails (Figure C-14). The geogrid confinement chambers distribute trail tread loads over a greater area and reduce settling,

both of which help keep trail surfaces intact, in place and dry. The geotextile material provides separation between saturated soil and the tread fill, or increased containment over a sand base. Permeable tread fill provides drainage if the trail is built with a grade or on a sideslope. Imported soils should not be used for tread fill in areas of sensitive natural habitat.

6-2 Permanent and Moveable Above-Grade Trail Structures

Boardwalks, which are permanent trail structures described in BMP 10-2, Boardwalks, are traditionally used for access across sandy soils. Another option is textured panels with drain holes, which are installed directly on the surface without excavation (Figure C-15). These panels meet current accessibility guidelines and can be relocated. They may require additional maintenance, such as sweeping and readjustment of linked panels to provide a uniform surface.

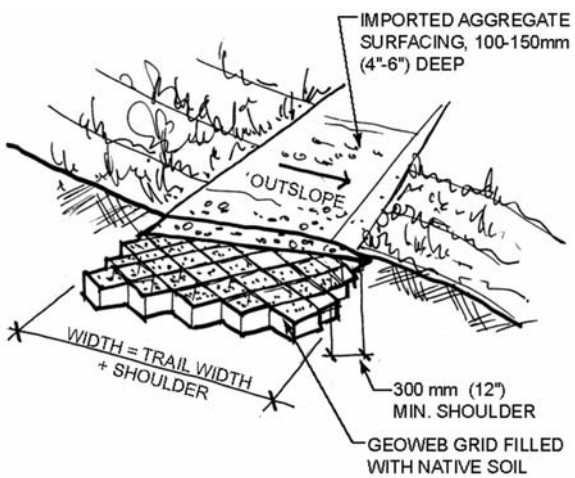

Figure C-14. *Subsurface Geogrid (BMP 6-1)*

Sand ladders are a series of logs connected by cable, such as the one in use on the dunes just south of Battery Crosby (Figure C-16). They are an option for sandy trails with a steep linear grade. Sand ladders do not provide an accessible route for people with disabilities. Periodic maintenance is required to restore sand ladders to grade level after sand accumulates on the surface.

Although temporary or moveable beach access routes are permitted, there are currently no recommendations for products that meet accessibility requirements. However, several products have been evaluated by the National Center on Accessibility and should be further evaluated by NPS.

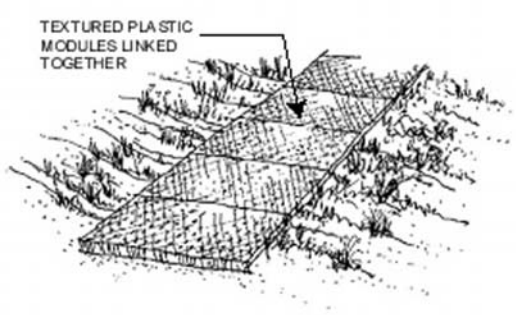

Figure C-15. *Moveable Textured Panel (BMP 6-2)*

Figure C-16. *Sand Ladder (BMP 6-2)*

7. Trails Damaged by Vehicle Use

As illustrated by Figure C-17A, maintenance vehicles can damage trails that were not designed to support vehicular traffic. Trail structural stability and strength should be increased on pedestrian and multi-use trails that will be used by maintenance vehicles. Since many Presidio trails are located in areas where sub-grades have a low bearing strength or are poorly drained, sub-bases and trail surfaces would need to be thicker than standard practice to support greater design loads.

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Figure C-17A. *Trail Damaged by Vehicle Use*

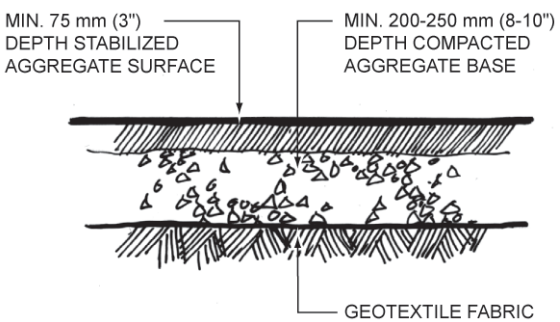

Figure C-17B. *Reinforced Trail Base (BMP 7-1)*

7-1 Geotextile Underlay and Deeper Sub-Base

Geotextiles can promote trail structural stability and increase the strength of trail cross sections. Wherever maintenance vehicle use is expected, geotextiles should be used to keep trail sub-bases intact and reinforce the structural qualities of trail sub-grades. In some cases, the depth of trail sub-bases should be increased to 0.2 m (8 in).

8. Bicycle Safety Improvements

The Presidio is located in a highly urbanized setting. Many bicycles and automobiles pass through the Presidio on roads linking San Francisco to the Golden Gate Bridge. As a result, there is high potential for user conflicts at road intersections or at road-trail intersections. Figure C-18 illustrates one area of bicycle/automobile conflict. Recent studies indicate that 50 to 70 percent of bicycle and motor vehicle crashes nationally are at intersections and intersection-related locations. In addition, the public has expressed concern about pedestrian safety and the potential for user conflicts.

8-1 Roadway Narrowing

In conjunction with bicycle lanes, narrowing roadways can reduce motor vehicle speed, increase safety, and redistribute space to bicyclists and pedestrians. Roadway narrowing can be

Figure C-18. *Typical Location: Bicycle/Auto Conflict on Washington Boulevard*

accomplished by reducing motor vehicle lane widths, removing travel lanes, or converting wide shoulder parking areas to bike lanes. Roadway improvements to improve safety along Lincoln Boulevard at the coast have been identified as a high priority by the public and by researchers (Peccia 1994).

8-2 Crossing Island/Curb Extensions

Physical measures, such as installing crossing islands or curb extensions, are another means of narrowing roadways and increasing safety. To maximize accessibility, crosswalks should cut through crossing islands at the same elevation as the roadway. Curb extensions may be appropriate in residential areas, but should only be used where

there are on-street parking lanes so that the curbs do not extend into travel or bicycle lanes. Curb radius reduction is particularly effective in improving pedestrian safety at crossings by slowing right-turning vehicles, reducing crossing distances, and improving visibility between drivers and pedestrians.

8-3 Raised Intersection and Raised Pedestrian Crossing

Raising an entire intersection or crosswalk is an effective means of encouraging motorists to yield the right of way to pedestrians. Tactile warning strips at edges enable people with visual disabilities to detect the crossings. Since these devices also slow down emergency vehicles, their placement should be limited and these intersections should have adequate sight distances. This technique might be appropriate where a multi-use trail crosses the road or at intersections in the Main Post (such as on Moraga Street and Lincoln Boulevard) that have been identified as hazardous by both the public and researchers (Peccia 1993).

8-4 Specific Paving Treatments

Paving treatments can visually delineate space for pedestrians and bicyclists. Paving can be used alone or with BMP 8-3, Raised Intersection and Raised Pedestrian Crossing, to increase pedestrian and bicycle safety. Textured crosswalks, speed bumps and colored bike lanes are examples of paving treatments used to visually delineate crosswalks and bike lanes.

Textured crosswalks can be visual and tactile markers for pedestrian traffic, and also can provide aesthetic enhancement. However, crosswalks should not be constructed of materials that create unsafe or inaccessible conditions for bicyclists or people with disabilities. Since textured paving might not be visible at night, it should also be marked with reflective lines. Installing textured crosswalks at key points where trails intersect the roadway could reduce speeding through the Presidio's housing areas. Colored bike lanes are still under study in the United States. They have proved to been effective in increasing bicycle safety in many European countries

8-5 Roadway Lighting Improvements

Improved lighting enhances security and safety for all roadway users, particularly pedestrians. Commuter routes through the Presidio and from Presidio employment centers to housing and transit stops would benefit from improved lighting, particularly where pedestrian trails intersect with or cross roadways. Additional lighting would only be installed after careful consideration of wildlife and night sky sighting impacts.

8-6 Multi-Use or Pedestrian Trail Overpasses

Traffic calming measures cannot always provide adequate pedestrian or bicyclist safety where trails or bikeways cross busy streets. A pedestrian or multi-use trail overpass can connect off-street trails and paths across major barriers and provide complete separation from motor vehicle traffic. One appropriate location for an overpass is where the Bay Area Ridge Trail crosses Lincoln Boulevard from Fort Scott to the coastal batteries, near the intersection with Storey Avenue. Sight distance is short and vehicle speed is fast. Grade change on both sides of the road would reduce the visual impact of an overpass.

8-7 Special Roadway Intersection Treatments

Separating multi-use trail user groups at intersections can reduce confusion at trail-roadway intersections. Each intersection could be used as an entry/exit point by users and should be considered a transition zone. Separate entrances/exits or trailheads for user groups – buffered from each other – increase trail users' awareness at intersections. Adjustments to multi-use trail alignments, such as jogs, offsets, or sharp bends near the intersection, help to slow bike traffic and alert users to the intersection. Clear directional signage at these intersections should be provided.

8-8 Traffic Controls

Pedestrian and bicyclist safety can be improved at roadway/trail intersections with the addition of traffic lights and signage, such as stop signs. These improvements would be coordinated with Presidio transportation planning.

8-9 Narrow Gutter Pans

Bicyclist safety can be improved by minimizing the width of gutter pans. Where feasible, the width of gutter pans should be minimized, particularly where bike lanes are five feet or less in width.

8-10 Safe Bicycle Grates

Bicyclist safety can be improved by installing bicycle proof grates in drainage openings. Where feasible, existing grates will be replaced with bicycle proof grates such as those specified by Caltrans.

9. Social Trails Requiring Closure

As noted in the VMP, the Presidio provides a shelter for remnants of San Francisco's natural heritage, including communities of native plants, rare and endangered species, important wildlife habitat, and the last free-flowing stream in the city. Off-trail hiking and the development of social trails is a serious threat to native plant communities in the Presidio (Figure C-19). Although considered convenient by users, social trails are often unsafe, contribute to the loss of plant communities, and disturb wildlife. They also impact water resources through erosion and soil compaction. In order to protect the Presidio's unique natural resources, some social trails would be closed.

9-1 Entrance Point Closures and Signs

Obscuring the entrance to social trails with brush piles or permanent or temporary barriers, such as fences and signs, can discourage the use of social trails. Fencing should be kept to a minimum or used as a temporary measure to protect revegetation areas until these areas are well established. Trail closure signs might be installed temporarily until vegetation is established. Signs or notices posted at trailheads can inform people of the need for social trail closures and encourage them to comply with trail closures. Natural resources staff would help time the trail closures, to ensure that there is adequate time for seed and/or plant collection and salvage, and nursery propagation for revegetation.

Figure C-19. *Social Trail Through Forest*

9-2 Vegetation Restoration

Figure C-20 shows several effective techniques that can be used to rehabilitate areas damaged by social trails. For instance, it might be necessary to camouflage the trail surface to discourage continued use. One technique is vertical mulch or brushing-in, where materials are collected from the immediate vicinity and "planted" into the trail surface. Vertical mulch can facilitate the deposition of blowing soil, organic debris, and seeds while creating a protected site for plant reestablishment. Specific prescriptions for plant establishment would be done in consultation with park vegetation restoration specialists. In heavily eroded areas, native soil fill, grading, and temporary check dams may help slow and disperse water flow and encourage the deposition of sediments in ruts or low points.

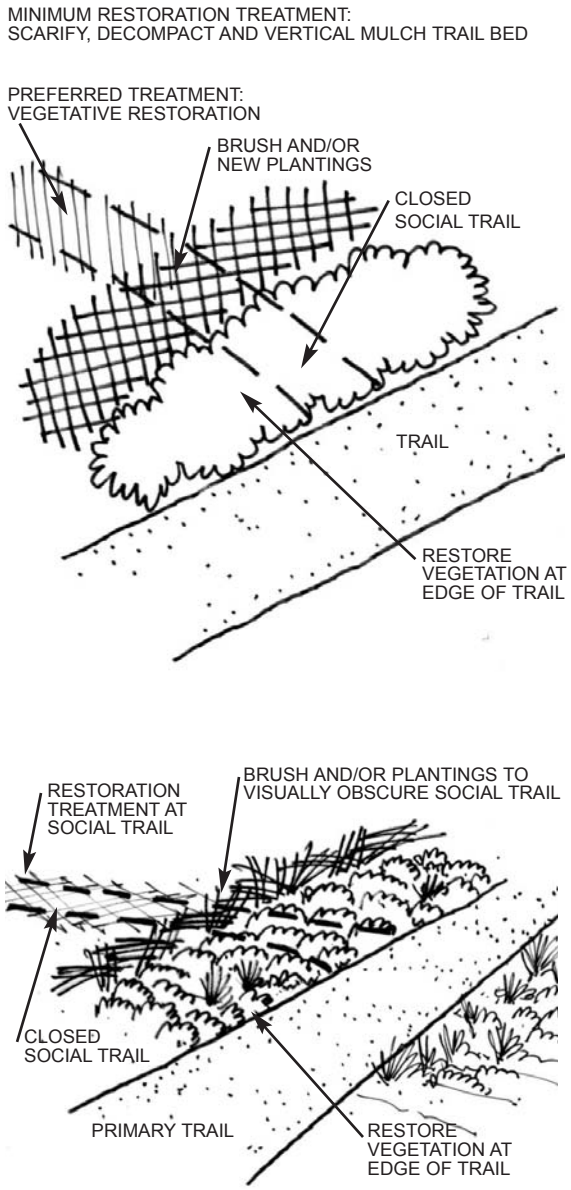

Figure C-20. *Vegetation Restoration (BMP 9-2)*

10. Trails in Proximity to Sensitive Resources

Visitor access to the Presidio's natural, cultural, and historic resources must be constructed to provide as much protection as possible to these sensitive resources. Figure C-21 illustrates the typical location of a trail in close proximity to sensitive resources. The following BMPs should be applied when developing trails in proximity to sensitive resources:

Figure C-21. *Lobos Creek Boardwalk*

10-1 Multi-Use or Pedestrian Trail with Barrier

Designated interpretive routes for Presidio visitors would help minimize the damage to sensitive resources caused by social trails. Providing multi-use trails would allow access, while encouraging all users to stay on established routes. Planted barriers can also be an effective means of keeping visitors on trails. If this approach is not feasible, fences that are compatible with each landscape management zone are another design option.

10-2 Boardwalks

Boardwalks, permanent trail structures often used in sensitive areas, are more easily constructed with minimum impact to the environment than standard trails. They also encourage people to stay on the designated trail. An important consideration in boardwalk design is to ensure that the need for two people using wheelchairs to pass each other is taken into account in the design.

Providing pullouts or overlook alcoves is another way to increase accessibility by allowing resting or observation without impeding the movement of other trail users. Boardwalk decking should be installed perpendicular to the direction of travel. Figure C-22 illustrates a boardwalk construction detail and typical cross section.

10-3 Moveable Panels

Moveable textured panels can be used in areas in proximity to sensitive resources. They are described in BMP 6-2, Permanent and Moveable Above Grade Trail Structures.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

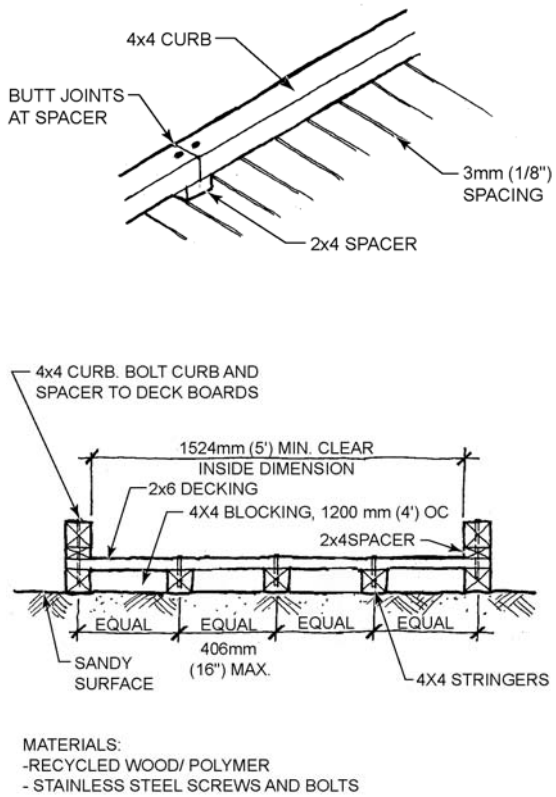

Figure C-22. *Boardwalk (BMP 10-2)*

10-4 Annual Trail Relocation

Periodically relocating non-permanent boardwalk and/or moveable textured panel trails can minimize trail impacts and permit previously disturbed areas to recover.

10-5 Bioswales

Non-point source pollution can be reduced by treating runoff in bioswales before it enters creeks or storm drains. Where feasible, bioswales may be used adjacent to trails to treat runoff.

11. Air Quality Measures

Fugitive Dust Control

11.1 Basic Control Measures

The following controls would be implemented at all construction sites, as appropriate:

- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard
- Water all active construction areas at least twice daily
- Pave, apply water three times daily or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas
- Sweep daily all paved access roads, parking areas and staging areas at construction sites (with water sweepers)
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets

11.2 Enhanced Control Measures

The following measures would be implemented at construction sites greater than 1.6 h (4 ac) in area, as appropriate:

- Implement all "Basic" control measures listed in 11.1
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more)
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)
- Limit traffic speeds on unpaved roads to 15 mph
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways
- Replant vegetation in disturbed areas as quickly as possible

11.3 Optional Control Measures

The following contol measures would be encouraged at construction sites that are large in area, located near sensitive receptors, or if any other reasons may warrant additional emissions reductions:

- Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site
- Install wind breaks or plant trees/vegetative wind breaks at windward side(s) of construction areas
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph
- Limit the area subject to excavation, grading and other construction activity at any one time (BAAQMD 1999)

12. Natural Resource Conservation

12-1 Planning

Perform natural resource planning efforts where applicable as part of project and/or site-specific planning activities. Where feasible, project implementation strategies will incorporate sufficient planning time to collect and grow propagules necessary for native plant restoration efforts, including special status species enhancement pursuant to applicable permits.

12-2 Limit Disturbance

Limit the size and intensity of disturbance allowed within and adjacent to listed species habitats within each calendar year.

12-3 Enhance Habitat

Select project designs that promote and enhance special status species habitat restoration to the greatest extent practicable. Construction design specifications will be developed and evaluated collaboratively with natural resource specialists.

12-4 Reduce Social Trails

Reduce the extent of effects and prevent establishment of informal trails within areas supporting federally listed species or within recovery areas. Prioritization of trail removal activities will be coordinated with both natural resource specialists and trail planners.

12-5 Use Existing Disturbed Areas

Within natural areas, trails will be located on existing disturbed areas. Disturbed areas include currently sanctioned trails, informal trails, old roadbeds, and sidewalks. A multi-disciplinary natural resources team will review the conversion of informal trails to designated trails to ensure that the existing alignment had no negative effects on federally listed plant habitat. Boardwalks may also be incorporated into trail alignments to prevent off-trail use in habitat for special status species.

12-6 Coordinate with Draft Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula

Final trail alignment and construction specifications will be consistent with the appropriate recovery plan objectives when trails fall within recovery unit areas. Within the lessingia recovery areas to be determined as part of the forthcoming final Recovery Plan, trails will be designed to the extent practicable to limit habitat effects, improve habitat values, promote flexibility for species population movement, encourage sand movement within the trail corridor and promote persistence of the dune annual community. Within the potential recovery areas for Raven's manzanita, dwarf flax and clarkia, trails will be designed to avoid serpentine outcrops and soils that are important recovery habitat.

12-7 Limit Increase in Impervious Surface

Construction activities within habitat for special status species will limit the loss or degradation of hydrological features and/or natural hydraulic processes, and avoid negative effects to surface drainage and groundwater flow rates and

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

direction. Within habitats for federally listed plants, trail construction will be designed to limit an increase or concentration of impervious surface area. The use of pervious concrete for hardscaping will be considered as part of future project-specific trail planning efforts.

12-8 Buffers and Erosion Control

Buffers and erosion control measures will be incorporated into projects within habitats for federally listed species. Where practicable, new development and planned intensive human activities will be located at least 30.5 m (100 ft) from the edge of federally listed plant habitat. In instances where buffer distance is limited, the following measures may be implemented:

- Install protective fencing or other protective measures (such as low shrub buffers and boardwalks) around affected federally listed plant habitat
- Federally listed plant habitat areas adjacent to project sites will be monitored regularly. If these areas are found to be effected from increased visitor and tenant use, protective fencing or other measures will be either installed or modified

12-9 Develop Joint Study

Conduct a joint NPS/Trust study to determine restoration-compatible trail rotation in restored (non-remnant) lessingia habitat.

12-10 Develop Revegetation Plans

A site-specific revegetation plan will be prepared for each project with revegetation needs within habitat(s) for federally listed plants. Treatments will be consistent with the VMP (or any amendments to it). Revegetation of non-designated trail obliterations will be implemented in a timely manner, typically within six months of disturbance-related construction activities, depending upon habitat type, timing of trail work and availability of native plant propagules. If trail obliteration activities are discontinued due to lack of resources, an invasive non-native plant control program will be implemented until resources for obliteration and restoration become available again. To the maximum extent practicable, immediate revegetation will be implemented for federally listed species habitat and recovery areas that have been disturbed by construction, infrastructure repair, excavation, increased land use or other project-related activities.

12-11 Protect Soil

Develop best management practices for earth moving and other soil-related activities to avoid harming federally listed plants during project activities. Where practical and appropriate, these practices and conditions will include:

- Maintaining appropriate erosion and siltation controls during construction and stabilizing exposed soil or ecologically compatible fill after construction
- If fill is necessary, using only fill that is certified weed free, is compatible with local hydrologic and ecological conditions, and is appropriate for the enhancement of listed species restoration activities
- Avoiding over-compaction of fill soils
- Maintaining trails and structures to avoid effects to habitat and public safety
- Excavated materials will not be side-cast or spread into federally listed plant habitat
- Minimizing the potential effects of dust and debris generation during trail construction by wetting the soil or other applicable methods as appropriate

- Designing trail construction to limit any increase or concentration of impervious surface area within habitat for federally listed plants (a variety of pervious materials will be considered for trails surfaces)

12-12 Limit or Prevent Erosion

Limit or prevent erosion in areas of federally listed plants. Where practical and appropriate, measures will include:

- Limiting heavy equipment use in wet soil areas or where compaction could occur by minimizing the footprint of equipment access areas
- Including decompaction measures in site grading and drainage plans to promote groundwater percolation
- Returning disturbed soils to a stable condition after project completion
- Controlling erosion in cases where project operations will expose soils on steep slopes or otherwise increase erosion potential
- Identifying short-term erosion control measures for use during inclement weather, as well as long-term site stabilization measures, appropriate erosion control techniques and materials and specifications for installation and monitoring

12-13 Use Compatible Soils

Use compatible backfill soils (e.g., serpentine for serpentine) in cases where establishment of federally listed plants requires specific soil types or conditions. The final soil and topographic conditions of excavated areas will be coordinated with professional restoration ecologists, hydrologists and/or geologists. If this clean fill is found to be incompatible with restoration and recovery objectives, it will be removed from the area.

12-14 Special Measures for *Lessingia*

In the event project activities require excavation of material directly within remnant lessingia habitat, the following measures will be implemented:

- All propagules will be gathered from the remnant population and stored separately from other gathered propagules (i.e., different species)
- To the greatest extent feasible, the hydrology and soil structure (texture, compaction, and composition) of the original habitat will be restored upon completion of excavation activities
- Propagules gathered from the remnant population will be planted throughout the restored area

12-15 Minimize Establishment of Invasive Species

Measures will be taken to minimize the establishment of invasive non-native species in disturbed soil areas. Such measures could include temporarily covering the soil and/or revegetation.

12-16 Protect Threatened and Endangered Species

Protect any threatened or endangered species known to occur within or adjacent to any construction work areas using fencing, signage, and other barriers. Protective measures will include:

- Qualified biological monitors shall be present for any activity within or adjacent to habitat
- Qualified biological monitors shall train construction workers in identification and ecological needs of the plant reproduction, and health of special status species
- Temporary construction barriers will be erected around listed species areas
- Staging areas, temporary stockpiles, and materials sorting activities will be kept away from listed species habitat as much as possible (these areas will also be fenced off to exclude pedestrian or pet access)

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

- Ensure that construction has only minimal influence on normal movement, migration, reproduction and health of special status species
- Waste, waste water, or other project-related materials generated on site shall be contained to ensure that none enters habitat for federally listed plants or other protected natural resource area
- Preventing unnecessary vehicular and human intrusion and use in native and federally listed plant habitat from adjacent construction, demolition, intensive special events and recreation activities (where necessary, formal or informal walking paths will be rerouted to accommodate the public)

12-17 Protect Listed Plant Species

Protect listed plant species by managing visitor and pet access in special status species habitat and recovery areas. Interpretive materials emphasizing resource and conservation values will be provided where visitor access within habitat for federally listed species will occur. These measures will include:

- Install interpretive signage to mark trails within endangered species habitat and associated recovery areas
- Incorporate boardwalks on trails where necessary
- Allow only seasonal access to certain trails where seasonal conditions will be expected to have a negative impact on special status species habitat or areas proposed for conservation of federally listed species (seasonal or permanent trail closures will be evaluated if protective measures fail)
- Restrict trail access to ranger-led activities where appropriate
- Install protective barriers, like fences, where trails pass through special status species habitats, and improve existing fences around these areas to prevent pet access where appropriate
- Monitor these measures to determine their effectiveness and evaluate if preventative measures are sufficient to ensure the conservation of listed species (if adverse impacts are observed within the management area, remediation measures will be developed in consultation with the USFWS)

12-18 Protect Migratory Birds

Implement the following measures to protect species protected under the Migratory Bird Treaty Act:

- Implement non-native wildlife control measures when necessary and feasible
- Cut vegetation only outside of bird nesting season (currently January 15 to August 15) unless monitoring indicates nesting birds are not present

12-19 Work Within Existing Disturbed Areas

Underground infrastructure work shall be staged within existing disturbed or developed corridors in order to prevent direct and indirect negative effects on federally listed plants. Where feasible, infrastructure maintenance activities will be minimized in habitat for federally listed species and recovery areas.

12-20 Prohibit Off-Trail Bicycle Use

Prohibit all off-trail bicycle use throughout the Presidio in order to prevent erosion, protect special status plant species and minimize damage to natural areas and wildlife habitat. In habitat for federally listed plants, pedestrian use will be constrained.

12-21 Protect Restoration Activities

Protect restoration activities by installing temporary fencing (as needed) around special status species habitat areas during restoration projects. Temporary fencing will remain standing

while native species establish and spread (about 3 to 5 years, depending on climate-driven variables).

12-22 Coordinate Project Operations

Coordinate project operations involving vegetation or revegetation with natural resource staff to ensure project sites are revegetated using appropriate plants. To the maximum extent feasible, native plants used for revegetation will be grown from existing Presidio genetic stock and propagated either at the Presidio-based nursery itself or in accordance with established practices of the GGNRA nursery system. If onsite seeds and cuttings are unavailable, offsite sources will be evaluated to determine the most appropriate source for reintroduction, and documentation justifying the reintroduction decision will be prepared. Non-native plant control will continue after restoration until the following goals are met:

- Ensure the establishment of planted species by establishing success criteria and monitoring for federally listed species
- Prevent the spread of any opportunistic non-native species to existing Raven's manzanita, lessingia, dwarf flax and clarkia habitat
- Protect and conserve existing native plant material (cuttings and seed material) by conducting salvage efforts when determined appropriate and feasible by a natural resource specialist (salvage will be coordinated by a qualified biologist prior to the proposed activities)

12-23 Prevent Weeds

To the extent feasible, prevent the introduction of non-native plant and plant materials to listed species habitat and recovery areas. Preventative measures will include:

- Use certified "weed free" rice straw or other approved "weed-free" materials for erosion control and prohibit the use of any materials containing non-native plant seeds
- Ensure fill is purchased from a certified weed free source
- Clean all non-native plant seeds or material from equipment prior to it entering the special status species habitat area. Equipment traveling between areas will be cleaned each time it enters a special status species habitat site

12-24 Develop Monitoring Program

Develop site-specific, USFWS-approved biological monitoring protocols prior to implementing project activities. This strategy will involve periodic site visits by a qualified biologist, as well as biologist consultation prior to the commencement of any new activities in or adjacent to special status species populations. The biologist will also monitor the removal and/or import of plant material or soil during implementation, to ensure salvage of as much native plant material as feasible.

12-25 Monitor Rare Species

Monitor and protect rare or endangered plant species, including any federal and/or state listed threatened or endangered species found to occur in the Presidio. Identified actions will be taken to recover these species, and their habitats will be enhanced to the greatest extent practicable. Any future rare or endangered species found on the Presidio will also be afforded similar appropriate protection and restoration measures.

12-26 Establish Monitoring Period

Establish a standard monitoring period and success criteria for projects affecting federally listed species, including photo documentation of the pre-project condition, restoration activities, and annual photo points

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

APPENDIX D. CUMULATIVE PROJECT LIST

The following plans and projects were considered during development of the Trails Plan/EA:

Comprehensive Bicycle Master Plan (City and County of San Francisco)

The Master Plan provides for improved transit access for bicycles, and funding for bicycle improvements to increase road safety. Its goals include: improving regional connectors (the Bay Bridge is especially important for bike and pedestrian access); providing intermodal connections (MUNI, BART, GG Transit, Ferries, SamTrans, CalTrain, etc.) for commuters between counties; and making San Francisco Bay Trail improvements, including completion of the bicycle route along the San Francisco Bay shoreline. The Master Plan is being updated to reflect changes that have taken place since the plan was approved in 1997.

2001 Regional Bicycle Plan for the San Francisco Bay Area (Metropolitan Transportation Committee)

The Plan, a component of the 2001 Regional Transportation Plan for the San Francisco Bay Area, is regional in focus and concentrates on broader policies and programs, deferring to local decision-makers on specific routes and facilities. Its objectives are to:

- Define a network of regionally significant bicycle routes, facilities, and necessary support programs
- Identify gaps in the network and recommend specific improvements needed to fill these gaps in the system
- Develop cost estimates for build-out of the entire regional network
- Develop a funding strategy to implement the regional bicycle network
- Identify programs to help local jurisdictions become more bicycle-friendly

Presidio Vegetation Management Plan (National Park Service/Presidio Trust)

The VMP provides a management framework for protecting, enhancing, restoring and rehabilitating the native and planted vegetation of the Presidio (Areas A and B). The VMP guides the actions affecting plant resources of the Presidio. It establishes three broadly defined management zones for the Presidio, develops goals, objectives, and strategies for each, and defines the baseline extent of the historic forest. The guidance provided by the VMP will reduce the potential for adverse effects on park resources and establish a framework for a coordinated management effort in rehabilitating and restoring native plant communities, historic forests and landscaped areas of the Presidio.

Crissy Field Marsh Expansion Technical Study

(National Park Service/Presidio Trust/Golden Gate National Parks Association)

The Marsh Study will identify a broad array of options for ensuring the long-term viability of Crissy Marsh and describe the benefits, costs, impacts, conflicting resource values and trade-offs associated with each option. It will provide sufficient technical information to inform a subsequent decision-making process that would carry selected options forward for further study, environmental analysis and potential implementation.

Exhibit 4: Presidio Trails and Bikeways Master Plan and Environmental Assessment

Crissy Field Project (National Park Service)

The Crissy Field Project transformed a 100-acre area of asphalt into a shoreline national park through a unique partnership among public, private and philanthropic sectors. The Golden Gate Promenade at Crissy Field, part of the 400-mile San Francisco Bay Trail, is a multi-use trail that is an important corridor between San Francisco and the Golden Gate Bridge. Secondary pathways adjacent to Mason Street provide alternate routes through the project area for bicycles and pedestrians. Principal features of the project are a 28-acre grassy field representing the historic Crissy airfield, a sheltered picnic area, a 10-acre tidal marsh and the Crissy Field Center (a community environmental center).

Presidio Trust Management Plan (Presidio Trust)

The PTMP is a comprehensive land use, transportation and program plan for Area B, the portion of the Presidio transferred to the Trust's jurisdiction in 1998. The PTMP sets forth land use preferences and development guidelines to inform future land use and implementation decisions. Key components of the PTMP include preservation of historic resources, expansion of open space, reduction in building space from 5.96 million sf to 5.6 million sf, and providing an enhanced level of cultural and educational programs for park visitors. The PTMP calls for a seamless network of trails and bikeways through the Presidio, and commits the Trust to undertaking the most pressing trail repairs and setting priorities for future enhancements. PTMP promotes initiating a Trails Stewardship Program to promote public support and interest in trail maintenance and improvement following adoption of the Trails Plan.

Letterman Digital Arts Center (Presidio Trust)

The Letterman Digital Arts Center, a major facility currently under development, is located on a 23-acre site in the eastern portion of the Letterman District near the Lombard Gate. It will be the largest physical change to the Presidio's built environment. The 850,000-sf facility will be more consistent with the scale and architectural character of the historic district than the buildings it replaces. The LDAC will provide a large, public open space at Lyon and Lombard Streets, offering opportunities for passive recreation and pedestrian access, including a new gateway at the intersection of Lyon Street and Chestnut Street. Parking will be provided underground.

Mountain Lake Enhancement Plan (Presidio Trust / National Park Service / Golden Gate National Parks Association)

The Mountain Lake Enhancement Plan has three goals: improve water quality, enhance habitat and improve public access. Elements of the project include dredging to remove sediment, replacing exotic trees with native woodland, removing weeds in existing habitat, planting trees along Park Presidio Boulevard to buffer the lake from the roadway and constructing an unpaved, interpretive trail with several overlooks and benches.

Presidio Water Recycling Project (Presidio Trust)

The Presidio Water Recycling Project entails the constructing and operating of a small (500,000 gallons per day) water recycling system (located within an existing Presidio building in the Letterman District) and corresponding system components, including delivery pipelines and recycled water storage. The proposed water

recycling plant would treat wastewater generated at the park so that it meets or exceeds Title 22 water quality standards for recycled water. Phase 1 would have a maximum treatment capacity of 200,000 gpd and would serve Crissy Field and the LDAC site.

Presidio Environmental Remediation Program (Presidio Trust)

Pursuant to a 1999 agreement with the U.S. Army and the National Park Service, the Presidio Trust is cleaning up hazardous materials contamination from prior military uses at the Presidio, in compliance with governing environmental clean-up agreements. Clean-up sites include landfills and areas contaminated with petroleum products. The Trust intends to complete the clean-up program in ten years, with Area A of the Presidio cleaned up in four years. Remediation will be followed by revegetation in conformance with the VMP.

Tennessee Hollow Riparian Corridor Enhancement Project (Presidio Trust)

In Fall 2001, the Trust initiated planning to restore Tennessee Hollow, to restore a functioning stream ecosystem with associated riparian and wetland habitats; improve the quality of freshwater flows into Crissy Marsh; improve management practices in the surrounding watershed; protect and enhance cultural and archaeological resources; provide recreational, educational and interpretive opportunities; and adapt existing infrastructure to support the restoration. Surface drainage and native riparian habitat will be restored along the three natural drainages in Tennessee Hollow, including El Polin Spring. Restoration will expand riparian habitats and allow for an integrated system of freshwater streams and freshwater, brackish and tidal marsh, reestablishing a connection to Crissy Marsh.

Presidio Shuttle Service (Presidio Trust)

The Trust provides an alternative-fuel internal shuttle service ("PresidiGo") linked to public transit stops. The service connects to both San Francisco Municipal Railway (MUNI) and Golden Gate Transit bus lines and could be made available upon request to school or community groups for park-related activities. New bus shelters will be built to serve both public transit and the internal shuttle, and will provide lighting, visitor orientation, route maps and schedules.

Golden Gate Bridge District Seismic Retrofit, Phase II (Golden Gate Bridge, Highway and Transportation District)

The Seismic Retrofit is divided into two phases. Phase I, now completed, is the retrofit of the north abutment of the bridge. Phase II, which began in the summer of 2001, will retrofit the southern abutment of the bridge. Phase II also requires heavy truck traffic on existing roads and trails, and possible use of trails as staging areas. Trail routes through and to the area may need to be relocated temporarily to reduce vehicle, pedestrian and bicycle conflicts. Bicycles and pedestrians share Battery East Road and Marine/Long Drives with construction trucks from Monday to Thursday during working hours.

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Golden Gate Bridge District Remediation, Phase II (Golden Gate Bridge Highway and Transportation District)

Remediation of contaminated soils below the Golden Gate Bridge is occurring as a two-phase project. Phase I, now completed, focused on cleanup of contamination in areas directly below the bridge where safe access was needed for construction crews working on the Golden Gate Bridge Seismic Retrofit Project. Affected areas include Battery East and popular vista areas near the bridge. Phase II will continue to investigate contaminated soils to determine where remediation is required to protect public health and natural resources. The Phase II planning horizon is approximately 5 years.

Golden Gate Bridge Toll Plaza Redesign (Golden Gate Bridge, Highway and Transportation District)

The redesign of the Golden Gate Bridge Plaza will provide visitor facilities and interpretive exhibits of the bridge and coastal fortifications, and provide visitor orientation to the Golden Gate National Recreation Area. The maintenance yard used by GGBHTD will be relocated away from the plaza to allow parking and pedestrian improvements that will reduce safety hazards and enhance the viewshed. Trail and bikeway improvements in the vicinity of Fort Point, the Golden Gate Bridge Plaza, and the Coastal Trail are part of this planning effort.

Doyle Drive Environmental and Design Study (San Francisco County Transportation Agency)

The Doyle Drive Environmental and Design Study proposes to replace the roadway leading from San Francisco to the south anchorage of the Golden Gate Bridge to improve seismic, structural, and traffic safety of the roadway. A number of alternative roadway designs are being considered. The project includes direct access from Doyle Drive to the northeast corner of the Presidio near the Palace of Fine Arts parking lot. The project anticipates the connection of the Tennessee Hollow drainage to an expanded Crissy Marsh. The project will maintain automobile, pedestrian and bicycle access during construction. Permanent trail and bikeway connections provided for as part of the project design would be consistent with those identified in the Trails Plan.