National Park Service • U.S. Department of the Interior

GOLDEN GATE NATIONAL RECREATION AREA
MUIR WOODS NATIONAL MONUMENT

FINAL GENERAL MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT

VOLUME II | 2014

Cover photo credit: Robert Campbell

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INTRODUCTION

This part of the document describes the existing environment of Golden Gate National Recreation Area and Muir Woods National Monument. This discussion serves to identify the current conditions in the park that could be affected by implementation of any of the alternatives in this plan. The information is organized around six general topics: natural resources, cultural resources, visitor use and experience, social and economic environment, transportation, and park operations, although there is some overlap between social and economic environment and transportation.

Regarding the discussion of the first three topics (natural resources, cultural resources, and visitor use and experience) differences between the two units are distinct enough to warrant separate discussions for Golden Gate National Recreation Area and Muir Woods National Monument. However, because of the proximity of the two units and their similar relationships to the urban centers within the planning area, combined discussions that incorporate information about both units are presented for the last three topics.

Table 1, beginning on the next page, presents more detailed information on specific impact topics and the reasons that each was retained or dismissed from further evaluation.

SUMMARY TABLE OF IMPACT TOPICS

TABLE 1. IMPACT TOPICS RETAINED FOR OR DISMISSED FROM DETAILED ANALYSIS

Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
Natural Resources		
Carbon Footprint and Air Quality Retained	Retained as an impact topic for further detailed analysis because of the interest in minimizing greenhouse gas emissions and reducing the carbon footprint of the park and monument, the Bay Area, and the state of California. The focus of the analysis is on greenhouse gas emissions related to NPS operational activities and how that would vary among the alternatives included in the plan. The park and monument are within the class II air quality areas under the Clean Air Act, as amended. A class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in section 163 of the Clean Air Act. The California Clean Air Act of 1988, as amended, sets ambient air quality standards that are more strict than the federal standards and requires local air districts to promulgate and implement rules and regulations to attain those standards. Under the act, California Ambient Air Quality Standards are set for all pollutants covered under national standards, as well as vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. If an area does not meet the California standards, it is designated as a state nonattainment area. Golden Gate National Recreation Area and Muir Woods National Monument are in the San Francisco Bay Area Air Basin, which consists of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa, and Marin counties, as well as portions of Sonoma and Solano counties. The Bay Area Air Quality Management District is the air quality agency responsible for the entire basin. The San Francisco Bay Area is designated a federal nonattainment area for ozone and a state nonattainment area for ozone and inhalable particulate matter. Dust and exhaust emissions would be produced by development activities and the potential for increased vehicular traffic to the park and monument; however, these activities would not be expected to cause national ambient air quality standards to be exceeded because visitation increases would be relatively small and the level of new development proposed is minimal. Air quality impacts from the use of prescribed fire were analyzed in the park's *Fire Management Plan / Environmental Impact Statement*. Any amount of pollutants added because of the actions proposed in this general management plan (GMP) would be negligible compared to existing levels. None of the actions described in	Clean Air Act Executive Order 13423 DOI Secretarial Order 3226, Amendment No.1 California Global Warming Solutions Act of 2006 (AB32) NPS *Management Policies 2006* NPS Pacific West Region Directive PW-047

TABLE 1. IMPACT TOPICS RETAINED FOR OR DISMISSED FROM DETAILED ANALYSIS

Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
	this plan would violate any air quality standard or result in a cumulatively considerable net increase of any criteria pollutant for which the Bay Area is in nonattainment under federal or state ambient air quality standards. Implementation of any of the alternatives described in the plan would have negligible effects on air quality and the class II air quality status of the park and monument would be unaffected.	
Soils and Geologic Resources and Processes (including natural shoreline and coastal processes) Retained	Soils and geologic resources and processes are an important component of maintaining the ecological integrity of the park and monument. Actions included in the plan, such as recreational facility development, changes in visitor use, and restoration, could affect soils and natural coastal processes. Any impacts that would adversely affect soils or geologic processes would be of concern to NPS managers and the public. Therefore, this topic was retained for detailed analysis.	NPS *Management Policies 2006*
Water Resources and Hydrologic Processes (including stream character, water quantity and quality, watershed processes, wetlands, floodplains, and marine/estuarine resources) Retained	Water resources and hydrologic processes are an important component of the ecological communities of the park and monument. Development can alter, and has altered in the past, natural surface flows and watershed processes, with subsequent effects on the natural environment. Actions included in the plan, such as recreational facility development and stream/habitat restoration, could affect water quality, wetlands, floodplains, and watershed processes. Therefore, water resources and hydrologic processes were retained for detailed analysis.	Clean Water Act; Executive Order 12088 Executive Order 11990 Executive Order 11988 NPS *Management Policies 2006* Director's Order 77-1 Director's Order 77-2
Habitat (vegetation and wildlife) Retained	Terrestrial and aquatic habitat is an important resource that defines the natural environment. The park and monument contain a diversity of plant and animal habitats. Actions included in the plan, such as recreational facility development, changes in visitor use, and restoration, could affect natural habitat values. Proposed actions could beneficially or adversely affect these resources, which would be of concern to NPS managers and the public. Therefore, this topic was retained for detailed analysis.	NPS Organic Act NPS *Management Policies 2006*
Special Status Species: Federal Threatened and Endangered Retained	The park and monument host a variety of federal listed species. Actions included in the plan, such as recreational facility development, changes in visitor use, and habitat restoration, could affect the quality of habitat preferred by many of these species, as well as the behavior of certain species. Therefore, the following federal listed species were retained for detailed analysis: northern spotted owl, coho salmon, steelhead trout, California red-legged frog, mission blue butterfly, tidewater goby, western snowy plover, San Francisco *Lessingia*, San Francisco garter snake, and San Bruno elfin butterfly. See appendix D for a listing of all special status species considered. All species that have been retained for analysis are identified in the appendix table.	Endangered Species Act Migratory Bird Treaty Act NPS *Management Policies 2006*

TABLE 1. IMPACT TOPICS RETAINED FOR OR DISMISSED FROM DETAILED ANALYSIS

Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
Special Status Species: State Threatened and Endangered Retained	The park and monument host a number of state listed species. Actions included in the plan, such as recreational facility development, changes in visitor use, and habitat restoration, could affect the quality of habitat preferred by one or more of these species, as well as the behavior of the species. Therefore, the following state listed species was retained for detailed analysis: bank swallow.	Endangered Species Act California Endangered Species Act NPS *Management Policies 2006*
Special Status Species: Other Federal and State Listed Species Dismissed	Several other federal and state listed species that are known to occur in the area were dismissed because (1) these species are typically not found in the park or monument, (2) their preferred habitat would not be physically disturbed by any of the GMP alternatives, or (3) the effects of actions included in the alternatives on these species would be negligible. See appendix D for a listing of all special status species considered. All species that have not been identified as "Retained" were dismissed for one or more of the above reasons.	Endangered Species Act Bald and Golden Eagle Protection Act Migratory Bird Treaty Act Marine Mammal Protection Act National Environmental Policy Act California Endangered Species Act *NPS Management Policies 2006*
Essential Fish Habitat Dismissed	In accordance with the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, federal agencies that fund, permit, or carry out activities that may adversely impact essential fish habitat are required to consult with the National Marine Fisheries Service regarding the potential adverse effects of their actions on essential fish habitat; such agencies must also respond in writing to National Marine Fisheries Service recommendations. Essential fish habitat is defined as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Waters include aquatic areas and their associated physical, chemical, and biological properties. Substrate includes sediment underlying the waters. "Necessary" means the habitat required to support a sustainable fishery and the species' contribution to a healthy ecosystem. Spawning, breeding, feeding, or growth to maturity covers all habitat types used by a species throughout its life cycle. The conservation of essential fish habitat is an important component of building and maintaining sustainable fisheries. Loss or degradation of essential fish habitat is primarily the result of activities such as point and nonpoint water pollution, livestock grazing, mining, road construction, estuarine or marine habitat alteration, creation of migration barriers or hazards, increases or decreases in sediment delivery, and alteration of streambanks, shorelines, wetlands, and floodplains. The San Francisco Bay, a migratory corridor between riverine habitat and the Pacific Ocean, is designated critical habitat for several listed fish species. Habitat loss and degradation is primarily the result of overfishing, timber harvest, point and	Magnuson-Stevens Fishery Conservation and Management Act

TABLE 1. IMPACT TOPICS RETAINED FOR OR DISMISSED FROM DETAILED ANALYSIS

Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
	nonpoint water pollution, livestock grazing, mining, road construction, diking and streambank stabilization, and dredge and fill activities. None of the actions proposed in the GMP alternatives would contribute to essential fish habitat loss or degradation. Some of the actions described in this plan would contribute to improvements in the quality or quantity of essential fish habitat; however, additional environmental compliance and consultation with National Marine Fisheries Service would take place prior to implementation of these specific projects. Therefore, the topic of essential fish habitat was dismissed from further analysis.	
Marine Protected Areas Retained	Executive Order 13158, "Marine Protected Areas," defines marine protected areas as any area of the marine environment that has been reserved by federal, state, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein. The executive order requires every federal agency to identify its actions that affect the natural or cultural resources that are protected by a marine protected area and, to the extent permitted by law and the maximum extent practicable, to avoid harming these resources. There are several federal- and state-designated marine protected areas near the park. The marine and estuarine area of Golden Gate National Recreation Area was designated a federal marine protected area under the national system of marine protected areas on May 25, 2010. Impacts on the natural and cultural resources protected by these marine protected areas are analyzed under their respective topics and marine protected areas are not included as a separate impact topic.	Executive Order 13158
Prime and Unique Farmlands Dismissed	In August 1980, the Council on Environmental Quality (CEQ) directed that federal agencies assess the effects of their actions on farmland soils classified as prime or unique by the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS). Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops (e.g., citrus, tree nuts, olives, cranberries, fruit, and vegetables). The Farmland Protection Policy Act (7 *United States Code* [USC] 4201 et seq.) and the U.S. Department of the Interior (Environmental Statement Memorandum No. ESM94-7 – Prime and Unique Agricultural Lands) require an evaluation of impacts on prime or unique agricultural lands. According to Natural Resource Conservation Service soils data, prime and unique farmlands do exist within the jurisdictional boundaries of Golden Gate National Recreation Area in San Mateo County at and adjacent to the Rancho Corral de Tierra property. All of these farmlands (with one	Farmland Protection Policy Act Council on Environmental Quality 1980 Memorandum

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	small exception) are in private ownership and will not be acquired or managed by the National Park Service as part of the land transfer with the Peninsula Open Space Trust. The one exception is an approximately 5-acre segment of farmland (adjacent to the privately owned Aenlle property) that contains prime soils. The National Park Service intends to use the land for native plant production supporting landscape restoration projects in the park. Consequently, no loss of prime soils or their potential for agricultural production would occur. However, the management zone used in the preferred alternative and in one or more of the other alternatives (diverse visitor opportunities zone) allows for facility development, diverse visitor uses, and ecosystem restoration. Should the National Park Service decide to discontinue the agricultural use of the prime farmland and convert it to a nonagricultural use that could adversely impact its soil resources and its use and potential for agricultural production, then the National Park Service would be required to evaluate the impacts on prime farmland and consult with the Natural Resource Conservation Service. Within Golden Gate National Recreation Area in Marin County, only farmland of statewide importance exists—there are no prime and unique farmlands. Based on a determination by the Natural Resource Conservation Service in 2007, soils and farmland in the vicinity of the Lower Redwood Creek property are not classified as prime or unique farmland. In addition, there are no prime and unique farmlands within the boundaries of Muir Woods National Monument. Therefore, this topic was dismissed from further analysis.	
Natural or Depletable Resource Requirements and Conservation Potential Dismissed	None of the alternatives being considered would result in the extraction of new resources from Golden Gate National Recreation Area or Muir Woods National Monument. In all of the alternatives, ecological principles would be applied to ensure that the natural resources of the park and monument were maintained and protected. Certain resources could continue to be collected for scientific and educational purposes, and the specimens would be stored in the NPS collection. Agricultural operations on NPS lands would continue to result in the harvesting of crops, which assist in meeting cultural landscape objectives. The fields would be managed to sustain this harvest. Implementation of the alternatives would result in the use of limited natural resources and energy for construction and operation of new recreational facilities and for restoration activities. New development would be designed to be sustainable to the maximum extent practicable. The use and consumption of fuel and other nonrenewable resources for NPS operations, activities, and development associated with the alternatives would be very small in comparison to that of the region. Overall, the impact on this topic would likely be negligible and thus it was dismissed from detailed analysis.	National Environmental Policy Act Council on Environmental Quality

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Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
Energy Requirements and Conservation Potential Dismissed	Council on Environmental Quality guidelines for implementing the National Environmental Policy Act of 1969 (NEPA) require examination of energy requirements and conservation potential in environmental impact statements. NPS staff strive to incorporate the principles of sustainable design and development into all facilities and park operations. Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short-term and long-term environmental impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy efficient and ecologically responsible materials and techniques. The NPS *Guiding Principles of Sustainable Design* (1993) provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook describes principles to be used in the design and management of visitor facilities that emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors within natural and cultural settings. The National Park Service would minimize energy costs, eliminate waste, and conserve energy resources by using energy efficient and cost effective technology wherever possible. Recent examples include projects to install photovoltaic panels on the NPS headquarters building at Upper Fort Mason and projects to pursue alternative energy options at Alcatraz Island. Energy efficiency would also be incorporated into any decision-making process during the design or acquisition of facilities, as well as all decisions affecting park operations. The use of value analysis and value engineering, including life cycle cost analysis, would be performed to examine energy, environmental, and economic implications of proposed NPS development. National Park Service staff would encourage suppliers, permittees, and contractors to follow sustainable practices and would address sustainable park and park partner practices in interpretive programs. Consequently, any adverse impacts relating to energy use, availability, or conservation would be negligible. Therefore, energy requirements and conservation potential was dismissed from further analysis.	National Environmental Policy Act Council on Environmental Quality

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Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
Cultural Resources		
Archeological Resources Retained	Actions included in the plan, such as recreational facility development, changes in visitor use, and ecosystem restoration, could result in impacts on archeological resources. Therefore, this topic has been retained for detailed analysis.	National Historic Preservation Act National Environmental Policy Act Secretarial Order 13007 Director's Order 28 NPS *Management Policies 2006* NPS-28A, "Archeological Resources Management"
Cultural Landscapes Retained	Actions included in the plan, such as recreational facility development, changes in visitor use, and ecosystem restoration, could result in impacts on the integrity and function of identified or potential cultural landscapes. Therefore, this topic has been retained for detailed analysis.	NPS *Management Policies 2006* NPS-28, "Cultural Resources Management"
Ethnographic Resources Retained	Research and consultation with affiliated American Indian tribes and descendants to identify and evaluate ethnographic resources, including sacred sites, have not been undertaken in the park and monument. There may also be ethnographic resources at Alcatraz Island that have association to other American Indian groups and individuals. Actions included in the plan, such as recreational facility development, changes in visitor use, and restoration, could result in impacts on potential ethnographic resources at Alcatraz Island. Therefore, this topic has been retained for detailed analysis.	National Environmental Policy Act Secretarial Order 13007 Director's Order 28 NPS *Management Policies 2006* NPS-28, "Cultural Resources Management"
Historic Structures Retained	Many of the structures in the park and monument are listed or have been determined eligible for listing in the National Register of Historic Places. Actions included in the plan, such as adaptive reuse of structures and changes in visitor use, could result in impacts on historic structures. Therefore, this topic has been retained for detailed analysis.	National Historic Preservation Act NPS *Management Policies 2006* NPS-28, "Cultural Resources Management"
Park Collections Retained	Actions included in the plan, such as options for the use, curation, and storage of park collections, could result in impacts on park collections. Therefore, this topic has been retained for detailed analysis.	National Historic Preservation Act NPS *Management Policies 2006* Director's Order 24 "Museum Collections Management"
Indian Trust Resources Dismissed	Secretarial Order 3175 requires that any anticipated impacts on Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets,	Secretarial Order 3175

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Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
	resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. There are no Indian trust resources in the park or monument; therefore, this topic was dismissed from further consideration.	
Visitor Use and Experience		
Visitor Use and Experience (including diversity of recreation opportunities; visitor access; experience of the park setting; visitor understanding, education, and interpretation; and visitor safety) Retained	Enjoyment of park resources by visitors is part of the fundamental purpose of a national park system unit. The visitor experience is an important issue that could be appreciably affected under the alternatives. The Organic Act of 1916 and NPS *Management Policies 2006* direct the National Park Service to provide enjoyment opportunities that are uniquely suited and appropriate to the resources found in the park and monument. The types and levels of access are important components of visitor use and experience and are of concern to many people as well as NPS managers. Therefore, this topic was retained for detailed analysis.	Enabling legislation NPS *Management Policies 2006*
Lightscape (dark night sky preservation) Dismissed	Due to its urban setting, light pollution is present in many areas of Golden Gate National Recreation Area and Muir Woods National Monument, although some areas retain a high degree of natural darkness. The National Park Service strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding the lights when possible, and using minimal impact lighting techniques. Any new facilities proposed in the alternatives that would necessitate new nighttime lighting would be constructed with down lighting that would minimize light pollution. Furthermore, the level and type of new development and lighting proposed in the plan is minimal and dispersed. The effects of actions contained in this plan on natural lightscapes would be negligible to minor. Therefore, lightscape was dismissed from further analysis.	NPS Organic Act Enabling legislation NPS *Management Policies 2006*
Public Health and Safety Dismissed	The proposed developments and actions included as part of the GMP alternatives would not result in any identifiable adverse impacts on human health or safety. Furthermore, visitor safety is addressed under the topic of visitor use and experience. Therefore, public health and safety was dismissed from further analysis.	Council on Environmental Quality Director's Order 12 Handbook
Soundscape (natural sound preservation) Dismissed	An important part of the NPS mission is the preservation of natural soundscapes associated with national park system units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in a park unit, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound	NPS Organic Act NPS *Management Policies 2006* Director's Order 47

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	considered acceptable varies among national park system units, as well as potentially throughout each park unit; generally acceptable levels are greater in developed areas and less in undeveloped areas. Unnatural sounds, often a by–product of recreational activities, can be intrusive and can impact natural soundscape conditions that affect visitor experience and use and wildlife. The National Park Service has taken substantial steps to preserve natural soundscapes and manage human-caused noise, especially at Muir Woods National Monument where data collection, research, and management actions have improved the natural soundscape and successfully led to improved visitor experiences. Actions included in the plan would not substantially change visitor use and the generation of human-caused noise compared to current conditions; consequently, sound conditions in the park and monument would not be expected to be substantially affected—the impact to the natural soundscape would be negligible to minor. Therefore, this topic was dismissed from further analysis.	
Social and Economic Environment		
Social and Economic Retained	The social and economic conditions of the Bay Area and the gateway counties of Marin, San Francisco, and San Mateo influence Golden Gate National Recreation Area and Muir Woods National Monument and how they are managed. Conversely, the park and monument directly contributes to the social and economic conditions of these three counties and the Bay Area as a whole. This section describes the potential beneficial and adverse impacts related to this relationship by highlighting the park's quality of life benefits as well as the Bay Area's demographic and economic trends.	National Environmental Policy Act
Conformity with Local Land Use Plans Dismissed	The basic land use of the park and monument as a public recreation and resource management area is in conformance with local land use plans. The creation of additional recreation and visitor service opportunities in the park and monument as proposed in the alternatives would be consistent with existing park land uses or local (non-NPS) land use plans, policies, or controls for the area. Therefore, this topic was dismissed from detailed analysis.	Council on Environmental Quality Regulations Director's Order 12 Handbook
Urban Quality and Design of the Built Environment Dismissed	The quality of urban areas would be addressed by design guidelines used to guide new development and the rehabilitation of existing structures, as well as project review processes that the National Park Service has in place, all of which are part of standard operating procedures. Throughout the park and monument, vernacular architecture and compatible design would be considered for new structures built (or modifications to existing structures) under all of the alternatives. Emphasis would be placed on designs, materials, and colors that blend in and do not detract from the natural and built environment. Consequently, adverse impacts on the	40 CFR 1 502.16

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Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
	quality of urban areas are anticipated to be negligible. Therefore, this topic was dismissed from detailed analysis.	
Environmental Justice Dismissed	Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the U.S. Environmental Protection Agency (EPA), environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Marin, San Francisco, and San Mateo counties, where the park and monument are located, contain minority and low-income populations; however, environmental justice is dismissed as an impact topic for the following reasons: NPS staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to input from all persons regardless of age, race, income status, or other socioeconomic or demographic factors. Implementation of any of the alternatives would not result in any disproportionate human health or environmental effects on minorities or low-income populations and communities. The impacts associated with implementation of the alternatives would not result in any effects that would be specific to any minority or low-income community. Any anticipated impacts, such as traffic, would not disproportionately affect minority or low-income populations.	Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations"
Transportation		
Visitor Connections to Park Sites and Communities Retained	Actions included in the plan, such as changes in visitor opportunities and access, as well as improvements to alternative transportation, could result in impacts on visitor connections to park sites and communities. Therefore, this topic was retained for detailed analysis.	National Environmental Policy Act

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Impact Topic (*Retained* or *Dismissed* from further analysis)	Rationale	Relevant Law, Regulation, or Policy
Functionality of the Transportation System Retained	Actions included in the plan, such as changes in visitor access, alternate modes of transportation, and transportation system assets, could result in impacts on the functionality of the parks' transportation system. Therefore, this topic was retained for detailed analysis.	National Environmental Policy Act
Park Management, Operations, and Facilities		
NPS Operational Facilities Retained	Support facilities necessary to house, transport, inform, and serve visitors and staff require proper planning, design, programming, construction, operation, and maintenance. Facilities should be cost-effective, integrate sustainable design, and consider impacts on the landscape, environs, and resources of the park and monument. Actions included in the plan, such as the type and location of NPS operational facilities for maintenance and law enforcement, could result in impacts on NPS operations and management. Therefore, this topic was retained for detailed analysis.	NPS Organic Act DOI Departmental Manual; NPS *Management Policies 2006* Director's Order 80
Staffing Retained	Actions included in the plan, such as changes in visitor opportunities, facility use, resource management, and interpretation/education, could result in impacts on NPS staffing. Therefore, this topic was retained for detailed analysis.	NPS Organic Act DOI Departmental Manual NPS *Management Policies 2006* Director's Order 80

NATURAL RESOURCES: GOLDEN GATE NATIONAL RECREATION AREA

INTRODUCTION

Golden Gate National Recreation Area is one of the largest urban national parks in the world. The park's 80,500 acres of land and water extend from Tomales Bay in Marin County south into San Mateo County, encompassing 59 miles of bay and ocean shoreline. Golden Gate National Recreation Area is rich in natural resources—it comprises 19 separate ecosystems and is home to more than 1,250 plant and wildlife species. With 80 sensitive, rare, threatened, or endangered species, Golden Gate National Recreation Area ranks fourth among all units in the national park system in the number of federally protected and threatened species found within the park.

Numerous special status designations emphasize the collective importance of Golden Gate National Recreation Area and Point Reyes National Seashore as areas of biological significance. The Nature Conservancy has listed this region as one of the six most biologically important areas in the United States; it is a biodiversity "hot spot" recognized by The Nature Conservancy and targeted by the global conservation community as key to preserving the world's ecosystems. Conservation International describes this portion of central California as one of the top 25 hotspots and the most threatened of all biologically rich terrestrial regions in the world. Point Reyes National Seashore and Golden Gate National Recreation Area are jointly designated as a biosphere reserve, one of 411 reserves designated by the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Man and the Biosphere Programme to provide a global network representing the world's major ecosystem types (NPS 2007a).

Golden Gate National Recreation Area is part of the California Floristic Province (characterized by Mediterranean vegetation) and a zone of overlap of marine provinces (Californian and Oregonian) leading to a wide diversity of terrestrial and aquatic habitats. From the tip of Tomales Point to the southernmost areas of Sweeney Ridge and Phleger Estate, the natural communities of the park support a diversity of habitats: marine environments, coastline, sea cliffs and sand dunes, mud flats and salt marshes, chaparral and coastal scrub, grasslands, redwood forests, and oak woodlands. The recreation area spans two of the largest estuaries on the West Coast: Tomales Bay and San Francisco Bay. Aquatic associated habitats include ephemeral and perennial freshwater streams, groundwater seeps and springs, seasonal wetlands, tidal and brackish saline wetlands grading into estuaries, and the marine environment (NPS 2007a).

ALCATRAZ ISLAND

Alcatraz Island is an iconic part of Golden Gate National Recreation Area. Accounts of early explorers describe the island as having little plant life and covered with bird guano. Construction of the Civil War military fort and later the federal penitentiary changed the landscape significantly, sharpening the incline of the cliffs and flattening the slopes. Few plants are native to Alcatraz Island and most of the existing plants are a result of prison gardens or other means of importation, including soils brought from Angel Island during construction of the fort. Since the closure of the prison, many bird species have made the island home.

PHYSICAL RESOURCES

Air Quality

Section 118 of the 1963 Clean Air Act (42 USC 7401 et seq.) requires a national park system unit to meet all federal, state, and local air pollution standards. Golden Gate National Recreation Area and Muir Woods National Monument are in a class II air quality area under the Clean Air Act, as amended. A class II designation indicates the maximum allowable increase in concentrations of pollutants over baseline concentrations of sulfur dioxide and particulate matter as specified in section 163 of the Clean Air Act. Further, the Clean Air Act provides that the federal land manager has an affirmative responsibility to protect air quality-related values (including visibility, plants, animals, soils, water quality, cultural resources, and visitor health) from adverse pollution impacts.

The Clean Air Act requires the Environmental Protection Agency to identify national ambient air quality standards to protect public health and welfare. Standards were set for the following pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), inhalable particulate matter less than 10 microns (PM_{10}) and less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These pollutants are designated criteria pollutants because the standards satisfy criteria specified in the act. An area where a standard is exceeded more than three times in three years can be considered a nonattainment area.

The California Clean Air Act of 1988, as amended, sets ambient air quality standards that are stricter than the federal standards and requires local air districts to promulgate and implement rules and regulations to attain those standards. Under the act, California Ambient Air Quality Standards are set for all pollutants covered under national standards, as well as vinyl chloride, hydrogen sulfide, sulfates, and visibility-reducing particulates. If an area does not meet the California standards, it is designated as a state nonattainment area.

In 1993, the Environmental Protection Agency adopted regulations implementing section 176 of the Clean Air Act, as amended. Section 176 requires that federal actions conform to state implementation plans for achieving and maintaining the national standards. Federal actions must not cause or contribute to new violations of any standard, increase the frequency or severity of any existing violation, interfere with timely attainment or maintenance of any standard, delay emission reduction milestones, or contradict state implementation plan requirements. Federal actions that are subject to the general conformity regulations are required to mitigate or fully offset the emissions caused by the action, including both direct and indirect emissions over which the federal agency has some control.

Golden Gate National Recreation Area and Muir Woods National Monument are in the San Francisco Bay Area air basin, which consists of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa, and Marin counties, as well as portions of Sonoma and Solano counties. The Bay Area Air Quality Management District is the air quality agency responsible for the entire basin. The agency monitors criteria pollutants continuously at stations throughout the Bay Area.

Overall, air quality in the basin is better than in other urban areas of California despite widespread urbanization and extensive industrial and mobile source (vehicular) emissions. The Bay Area's coastal location and favorable meteorological conditions help keep pollution levels low much of the year, primarily due to the area's relatively cooler temperatures and better air circulation. However, when temperatures are hot and there are no ocean breezes, levels of ozone and other pollutants can exceed federal and state air quality standards.

The San Francisco Bay Area is designated a federal nonattainment area for ozone and a state nonattainment area for ozone and inhalable particulate matter (PM_{10} and $PM_{2.5}$). Ozone is a principal component of smog. It is caused by the photochemical reaction of ozone precursors (reactive organic compounds and nitrogen oxides). Ozone levels are highest in the Bay Area during days in late spring through summer when meteorological conditions are favorable for the photochemical reactions to occur, i.e., clear warm days and light winds.

An air emissions inventory was conducted in 1999 to determine the origins, compositions, and rates of emission of pollutants affecting park lands and resources. In addition to Golden Gate National Recreation Area activities, the inventory included air emissions associated with park partners and concession operations and visitor activities to the extent that data were available. Standardized emission factors and air quality models from the California Air Resources Board and the Environmental Protection Agency were used to develop emission levels for the range of activities and facilities that can emit pollutants in Golden Gate National Recreation Area (NPS 2005a).

Sources of air emission within Golden Gate National Recreation Area include all three types identified by the Clean Air Act: stationary sources, area sources, and mobile sources. Stationary sources can include fossil-fuel-fired space and water heating equipment, backup generators, fuel storage tanks, paint and chemical usage, and woodworking equipment. Area sources may include prescribed burning, campfires, and bonfires. Mobile sources may include vehicles and other equipment operated within the park by visitors, tour operators, Golden Gate National Recreation Area employees, and concession employees.

The emissions inventory included all lands and uses within the GMP planning area. Included in the inventory were all structures, vehicles, boats, and equipment used by the park, park partners, or concessioners such as Alcatraz Cruises, LLC, which operates the ferry service to Alcatraz Island.

There are no air quality monitoring stations in operation for the coastal areas of the Bay Area air basin that are certain to represent air quality conditions within the park. A monitoring station at Fort Cronkhite in the Marin Headlands records levels of toxins present in the air as a by–product of manufacturing, such as acetone and benzene, and does not monitor for criteria pollutants. The closest monitoring stations to park lands that record levels of criteria pollutants are in the cities of San Rafael, Redwood City, and eastern San Francisco. The levels recorded at these stations, which are in the midst of urban development, would be more representative of the cumulative levels of air pollutants in urbanized areas that contain heavily used roadways, urban and residential sources, and existing stationary sources throughout the air basin. Data collected at these stations can serve as very conservative estimates of ambient air quality affecting park lands, which are largely coastal and generally upwind (based on prevailing wind direction) of local sources of Bay Area air emissions, but are still subject to pollutant problems, such as ozone, that have a more regional effect on air quality. However, the actual ambient pollutant concentrations within park lands are anticipated to have lower background levels of these pollutants because the project area and surroundings are more remote and generally upwind of roadways and other emission sources (NPS 2005a).

TABLE 2. COUNTY VARIATION IN ATTAINMENT STATUS DEMONSTRATED BY MONITORING STATION DATA, 2001–2003

Pollutant	Redwood City San Mateo County		San Francisco San Francisco County		San Rafael Marin County	
	State Standard	Federal Standard	State Standard	Federal Standard	State Standard	Federal Standard
Ozone (1-hour)*	N	NA	A	NA	A	NA
Ozone (8-hour)	NA	NA	NA	NA	NA	NA
Carbon monoxide	A	A	A	A	A	A
Nitrogen dioxide	A	A	A	A	A	A
Sulfur dioxide	ND	ND	A	A	ND	ND
Particulate matter (PM_{10}) (Max. 24-hour)	NA	A	N	A	NA	A

Source: Bay Area Air Quality Management District Annual Bay Area Air Quality Summary
Notes:
A = Attainment, N = Nonattainment, U = Unclassified, NA = Not Applicable, ND = No data
*Attainment status is assigned only on an air-basin level. Though specific county monitors indicate attainment with NAAQS, all counties are included in the San Francisco Bay Area Air Basin, which is designated as nonattainment for 1-hour and 8-hour ozone national standards and for state standards for PM_{10}.

Carbon Footprint

A "carbon footprint" is a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced and is measured in units of carbon dioxide. The greenhouse effect is a natural phenomenon that keeps the earth's temperature stable at an average of 60 degrees Fahrenheit (ºF). Without this natural warming effect, our planet would be uninhabitable at an average temperature of 14ºF. However, human actions are disturbing this balance through over-production of large amounts of two main greenhouse gases—carbon dioxide (CO_2) and methane (CH_4). The increase in greenhouse gases is causing an overall warming of the planet, commonly referred to as *global warming*. The term *climate change* describes the variable consequences of global warming over time.

The National Park Service has a goal of reducing its contribution to global warming and climate change through the reduction of emissions. To begin tracking the results of their efforts, the park staff inventoried its emissions in 2006 using the Climate Leadership in Parks (CLIP) tool developed by the National Park Service and the Environmental Protection Agency. The CLIP tool converts emissions of various greenhouse gases into a common "metric tons of carbon dioxide equivalent" (MTCO2e) unit, which provides a basis for comparison among gases and simplifies reduction tracking. The conversion of a greenhouse gas to an MTCO2e unit is based on how strongly that particular gas contributes to the greenhouse effect and how many tons of carbon emission would have the same effect.

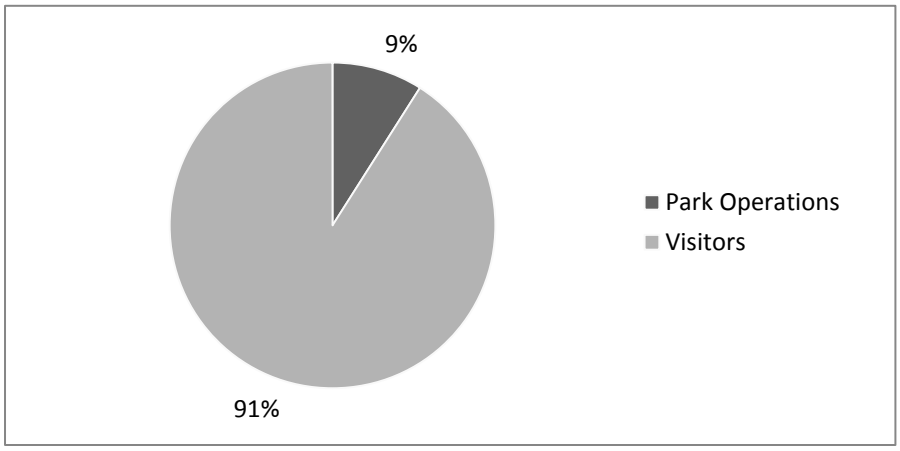
The emissions inventory (NPS 2007c) then examined the relative input of various sectors: stationary combustion (building furnaces, dryers, electrical generators, hot water heaters), purchased electricity, mobile

combustion (vehicles, buses, heavy equipment), wastewater treatment, and solid waste disposal (garbage transportation and decomposition) for Golden Gate National Recreation Area and Muir Woods National Monument. Based on the emissions inventory completed in 2006, emissions from visitors (mobile combustion primarily from personal automobile use) represents 91% of gross emissions and emissions from park operations represent 9% (figure 1). Figure 2 demonstrates how the NPS emissions from park operational activities are distributed among sectors when visitor emissions are excluded.

Visitor emission totals consist of an approximation of how much gasoline is consumed while driving to various park sites. Using annual visitor vehicle counts to many of the different sites in the park, the total number of miles driven by visitors was approximated (based on the assumption that they were driving from somewhere in the Bay Area). The resulting total vehicle miles driven by visitors was put into the CLIP tool. The CLIP tool then used assumptions about the different types of cars and the miles per gallon capacity of each to determine approximate fuel consumption.

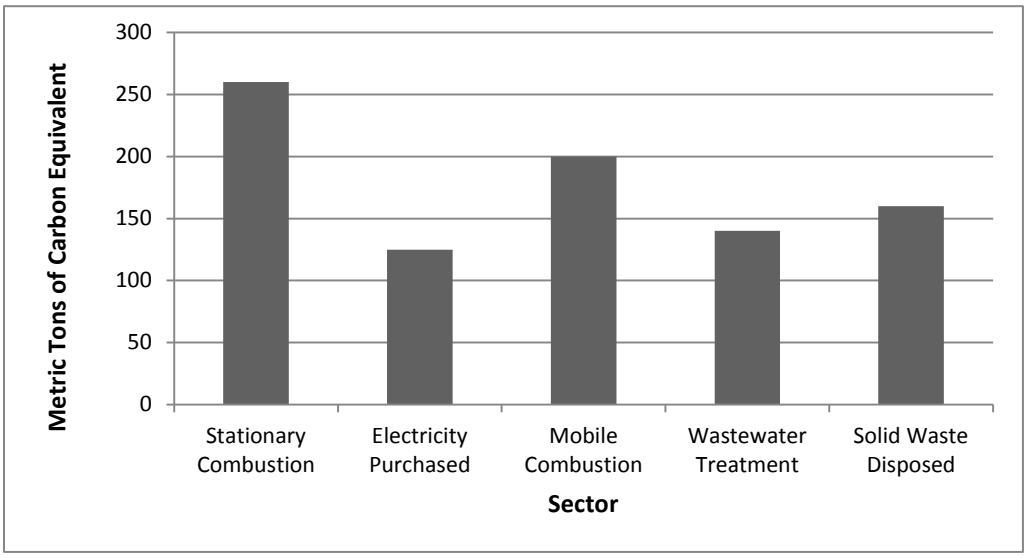
Figure 3 shows how the sectors of emissions are distributed when visitor emissions are included. The vast majority of emissions at Golden Gate National Recreation Area are attributable to visitor mobile combustion (vehicles).

In 2008, Golden Gate National Recreation Area emissions inventory was updated and included the following emissions statistics for Golden Gate National Recreation Area (including park lands in the three-county area and Alcatraz Island) and Muir Woods National Monument. These data represent existing baseline conditions.



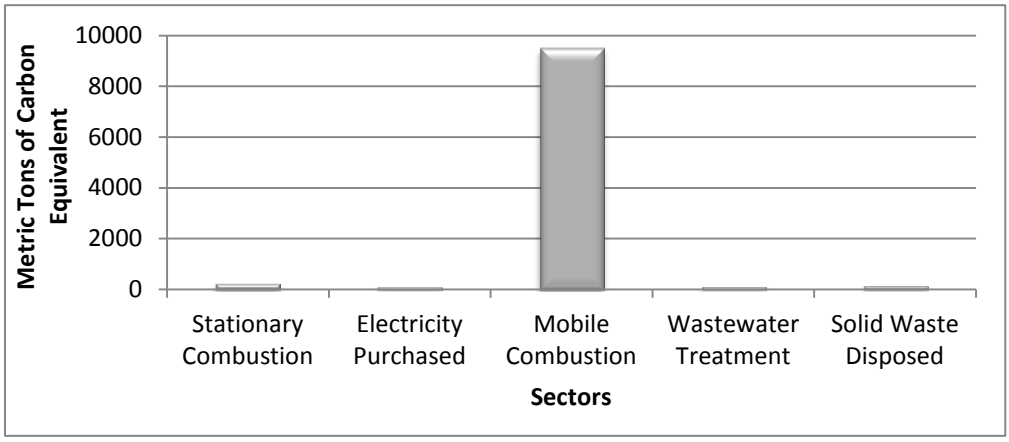
Source: Climate Change Action Plan for Golden Gate National Recreation Area, August 2007

FIGURE 1. GROSS EMISSIONS FOR GOLDEN GATE NATIONAL RECREATION AREA



Source: Climate Change Action Plan for Golden Gate National Recreation Area, August 2007

FIGURE 2. 2006 GROSS PARK EMISSIONS BY SECTOR, EXCLUDING VISITORS



Source: Climate Change Action Plan for Golden Gate National Recreation Area, August 2007

FIGURE 3. 2006 GROSS PARK EMISSIONS BY SECTOR, INCLUDING VISITORS

TABLE 3. EMISSION STATISTICS FOR GOLDEN GATE NATIONAL RECREATION AREA

	Marin County	San Francisco County	San Mateo County	Alcatraz Island	Muir Woods
Statutory combustion	523	148	No data available	632	5
Purchased electricity	385	382	No data available	0	17
Mobile combustion	1,047	1,419	No data available	1,167	4,873
Wastewater treatment	263	0	No data available	31	1
Solid waste	332	472	No data available	0	50
Gross emissions	2,551	2,422	No data available	1,830	4,946

Soils and Geologic Resources and Processes

Geology

The majority of the lands within Golden Gate National Recreation Area are on the North American Tectonic Plate. The more recently acquired lands in San Mateo are on the Pacific Plate. The boundary between these two plates is a transform fault (the plates are sliding past each other) and is formed by what is perhaps the best known geologic feature of California: the San Andreas Fault Zone. Movement along the San Andreas and its subsidiary faults (Hayward and Calavaras) is infamous for producing the large earthquakes that periodically shake California and result in the area's rugged terrain. Older rocks of coastal California indicate that before the Pacific Plate started slipping northward past the North American Plate on the San Andreas Fault system, the Pacific Ocean floor was subducted (moved) beneath the western edge of the North American Plate. The distinctive rocks of the world-famous Franciscan Complex, named at San Francisco and underlying much of coastal Northern California, formed in this subduction zone.

In the Bay Area, rocks of the Franciscan Complex form the basement for the Coast Ranges east of the San Andreas Fault. The Franciscan primarily consists of graywacke sandstone and argillite, but also contains lesser amounts of greenstone (altered submarine basalt), radiolarian ribbon chert, limestone, serpentinite (altered mantle material), and a variety of high-grade metamorphic rocks such as blue schist (high pressure), amphibolites and eclogite (high temperature). These rocks are typically highly fractured and disrupted and may be mixed together on a local scale to create what is called a *mélange* (French for "mixture" or "blend").

Because serpentinite is altered mantle rock, its chemistry is unlike most other continental rocks. Serpentinite is low in potassium and calcium, which are important plant nutrients. It also contains high levels of magnesium, nickel, and chromium that are potentially toxic to plants. Therefore, plants living on serpentine soils are specially adapted to these unusual chemical conditions, and

serpentinite areas can often be mapped based on the abrupt vegetation change that occurs at their boundaries.

Serpentinite outcrops in California and throughout the world are known to support rare and endangered plant species (Kruckenberg 1984). Some species are confined to just one or a few outcrop areas. Eight of the 12 rare plants found at the Presidio grow on serpentinite, including the federally endangered Presidio clarkia and raven's manzanita (Elder n.d.).

Soils

Most of the soils within Golden Gate National Recreation Area belong to the following complexes: Blucher-Cole, Centissima-Barnabe, Cronkhite-Barnabe, Dipsea-Barnabe, Felton Variant-SoulaJule, Franciscan, Gilroy-Gilroy Variant-Bonnydoon Variant, Henneke stony clay loam, Kehoe, Rodeo Clay Loam, and Tamalpais-Barnabe Variant (USDA, Soil Surveys for Marin, San Francisco, and San Mateo counties). All of these soils are susceptible to sheet and rill erosion when disturbed or exposed. The susceptibility to wind erosion is generally low. In general, these soils are characterized by slow to moderate permeability, rapid stormwater runoff, and a high hazard of soil erosion, soil creep, and occasional land sliding. An aerial view of the park area landscape makes clear the threats posed by erosion. Coastal waves rhythmically crash against the shoreline; deep, long gullies originate at old roads; heavily used areas are devoid of vegetation; undesignated social trails crisscross through the natural areas; and landslides or slumps exist in the small valleys (NPS 2005a).

Alcatraz Island is composed of consolidated sandstone sediments and is the remainder of a mountain that has been highly eroded. Much of the soil on the island is a result of importation from Angel Island during fort construction or soil amendments added over the years to support the various gardens and landscape areas.

Paleontological Resources

Fossils of tropical and subtropical species of zooplankton (radiolarian) have been found in chert of the Marin Headlands. Mollusk fossils (ammonite, belemnite, bivalve) have also been found here. Bivalve mollusk fossils are found on Alcatraz Island. Mori Point is a source of zooplankton (radiolarian, foraminifera). Fort Funston includes mollusk (gastropod, bivalve), sand dollar, crustacean, marine worm (polychaete), woolly mammoth, giant ground sloth, mastodon, horse, camel, canid and split-toed ungulate fossils. Fossils found on the Phleger Estate include mollusk (freshwater gastropod, bivalve), unnamed vertebrates, and plants.

Shoreline Processes

The park's coastal shoreline along the Marin Headlands, Golden Gate Strait, and San Francisco peninsula comprise a diverse mixture of rocky shorelines, fine-grained sand beaches, and artificial structures (e.g., piers), as well as sites with a mixture of fine-grained and larger substrates. As the name implies, the Marin Headlands are steep rocky headlands, such as Tennessee Point and Point Bonita, that are unprotected and exposed to high wave erosion and strong currents. In sheltered areas, large beaches, such as Rodeo and Muir beaches, form bars that create lagoonal features behind them. Small pocket beaches are often characterized by steep slopes and a mixture of small and large substrates. The Golden Gate strait is characterized by rocky headlands, smaller sand and gravel beaches, and strong tidal currents. Within the Golden Gate strait, the shorelines have a higher percentage of artificial structures such as rubble breakwaters (Fort Baker), seawalls (Alcatraz, Fort Point, and Presidio), piers, and riprap bank protection. Much of the San Francisco peninsula shoreline within the park is dominated by Ocean Beach, the park's largest sand beach resource (NPS 2007a).

Alcatraz Island is composed of fractured sandstone and is somewhat susceptible to wave-generated erosion.

Sea Level Rise, Flooding, and Coastal Vulnerability

While the effect of climate change on sea level has shocking global implications of inundating low-lying islands and threatening coastal cities and harbors, it also raises serious concerns for many U.S. national parks. Golden Gate National Recreation Area is no exception, given its extensive shorelines along the Pacific Ocean and San Francisco Bay. Although there is general consensus in the scientific community that notable sea level rise will occur over the next 100 years, the predicted degree of sea level rise varies considerably depending on which assumptions are incorporated into the prediction. For example, scientists who factor in the melting of the Greenland ice sheets predict that sea levels could rise 13 to 20 feet (approximately 4 to 6 meters) over the next 100 years as a result of global warming (Overpeck et al. 2006). If this occurs, the coastal areas of the park and the Bay Area will experience extraordinary change. This prediction is probably at the upper end of the range of sea level rise forecasts. It is also important to understand that mean sea level rise is not the immediate threat. The more immediate threat is the projected increase in storm frequency and severity and the related coastal flooding and erosion.

Other sea level rise projections incorporate only a partial contribution from the melting Greenland and Antarctic ice sheets. The Intergovernmental Panel on Climate Change (IPCC) is an international scientific body established by the United Nations Environment Programme and the World Meteorological Organization to provide a scientific view of the current state of climate change and its effects. In its latest assessment report, *Climate Change 2007*, the Intergovernmental Panel on Climate Change indicated that sea level rise by the year 2100 could range from 7.0 inches to about 24.0 inches (0.18 to 0.59 meters), depending on the climate change scenario that occurs over this time (IPCC 2007). However, the IPCC report was clear in noting that these projections do not factor in uncertainties in climate-carbon cycle feedbacks nor the full effects of changes in ice sheet flow or melting. Therefore, the report states that the upper value of this range should not be considered the potential upper bounds for sea level rise (IPCC 2007).

More recent research was conducted for the California Energy Commission's Climate Change Research Program to assess the effects of climate change and sea level rise on California over the next 90 years. Using a set of climate change scenarios of medium to medium-high emissions, researchers projected that the mean sea level will rise 3.3 to 4.6 feet (1.0 to 1.4 meters) along California's coast by the year 2100 (Cayan et al. 2009; Heberger et al. 2009). This is the most commonly used sea level rise forecast in the park's planning area. However, these respective climate change reports quickly clarify that most climate models do not include ice-melt contributions from the Greenland and Antarctic ice sheets. Thus, the potential sea level rise could be much higher than these figures (Heberger et al. 2009).

Predictions of sea level rise are useful in determining what resources and facilities could be affected. "Map 1. Sea Level Rise: Golden Gate National Recreation Area" illustrates the likely effect of the projected 4.7 feet (1.4 meters) sea level rise on the coastal corridors of the park by combining the effects of the sea level rise with a modeled 100-year flood (Heberger et al. 2009).

Also, the U.S. Geological Survey (USGS), in cooperation with the National Park Service, completed an assessment in 2005 (Pendleton, Thieler, and Williams 2005) of Golden Gate National Recreation Area's vulnerability to sea level rise using a tool called the Coastal Vulnerability Index. The Coastal Vulnerability Index provides insight into the

relative potential of coastal change due to future sea level rise.

The Coastal Vulnerability Index allows six variables (geomorphology, shoreline change, regional coastal slope, relative sea level rise, mean significant wave height, and mean tidal range) to be related in a quantifiable manner that expresses the relative vulnerability of the coast to physical changes due to future sea level rise. The index highlights those regions where the physical effects of sea level rise might be the greatest.

The most influential variables in the Coastal Vulnerability Index are geomorphology, coastal slope, and mean significant wave height; therefore, these may be considered the dominant factors controlling how Golden Gate National Recreation Area will evolve as sea level rises.

While climate change data reflect long-term increases in sea levels, there may be specific sites within Golden Gate National Recreation Area that could be more vulnerable to rising sea levels, even within the lifespan of this general management plan, particularly if the melting of the polar ice caps increases more rapidly than expected.

The colored shoreline depicted in "Map 2: Coastal Vulnerability" represents the relative Coastal Vulnerability Index determined from the six variables. The very high vulnerability shoreline is generally along sandy beaches where significant wave heights are highest and regional coastal slope is shallow; these areas include sites such as Ocean Beach, Fort Mason, Land's End, and Fort Funston. The lower vulnerability shoreline is along rock cliffs, mostly along the northern part of Golden Gate National Recreation Area where wave heights are lower and coastal slope is steep.

Of the 59 miles evaluated at the park, 50% were classified as having high (26%) or very high (24%) vulnerability, with another 26% classified as having moderate vulnerability (Pendleton, Thieler and Williams 2005). This information raises serious concern because the most vulnerable shorelines are on the southern peninsula where the largest concentration of humans and built facilities exist. This area also includes heavily visited beaches such as Ocean Beach, China Beach, and Baker Beach.

Marin Municipal Water District

BOLINAS LAGOON

Mount Tamalpais State Park

MUIR WOODS NATIONAL MONUMENT

STINSON BEACH

MUIR BEACH

RICHARDSON BAY

SAN PABLO BAY

Angel Island State Park

MARIN HEADLANDS

RODEO LAGOON

ALCATRAZ

CRISSY FIELD

PRESIDIO

LANDS END

SAN FRANCISCO BAY

OCEAN BEACH

FORT FUNSTON

MORI POINT

SWEENEY RIDGE

PEDRO POINT

San Francisco Peninsula Watershed (NPS Easement)

RANCHO CORRAL DE TIERRA

PHLEGER ESTATE

Muir Beach

Rodeo Lagoon

Crissy Field

This study addresses only the question of which areas are vulnerable to inundation, as opposed to quantifying the actual risk of inundation under a future scenario. Recent projections (Rahmstorf 2007) estimate the range of increase of global sea level at 50–140 cm above recent levels.

One hundred-year flood area means there is a one in one hundred chance (or 1%) chance of such a flood occurring each year.

The term "100-year flood" is misleading. It is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1% chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most Federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance. A structure located within a special flood hazard area shown on an NFIP map has a 26% chance of suffering flood damage during the term of a 30 year mortgage.

This work shall not be used to assess actual coastal hazards, insurance requirements, or property values and specifically shall not be used in lieu of Flood Insurance Studies and Flood Insurance Rate Maps issued by the Federal Emergency Management Agency (FEMA).

Knowles, Noah. 2008. Potential Inundation Due to Rising Sea Levels in the San Francisco Bay Region. URL: http://www.energy.ca.gov/2009publications/CEC-500-2009-023/CEC-500-2009-023-F.PDF

Data from website: http://cascade.wr.usgs.gov

See also: http://www.pacinst.org/reports/sea_level_rise

N

0 5 Miles

Sea Level Rise – Golden Gate National Recreation Area

- Areas inundated by unimpeded 100-year flood under baseline (year 2000) conditions
- Areas inundated by unimpeded 100-year flood under 1.4-meter (55-inch) sea-level rise scenario (projected, year 2100)
- Current Ocean, Bay, and Lakes
- Combined bluff and dune erosion hazard zone
- Buildings
- National Park Lands, GGNRA
- San Francisco Watershed Easement
- Future National Park Lands (July 2010)

United States Department of the Interior - National Park Service - GGNRA

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Map 1. Sea Level Rise: Golden Gate National Recreation Area

MAP 2. RELATIVE COASTAL VULNERABILITY TO SEA RISE

Water Resources and Hydrologic Processes

Water resources in Golden Gate National Recreation Area include springs, streams, ponds, lakes, wetlands, lagoons, San Francisco Bay, and the Pacific Ocean. Many significant watersheds are wholly or partially within the park. From north to south, the major watersheds are Bolinas Lagoon, Redwood Creek, Tennessee Valley (Elk Creek), Rodeo Lagoon (including Gerbode Valley subwatershed), Nyhan Creek, Lobos Creek, Milagra and Sweeney Ridges, West Union Creek, San Pedro Creek, Martini Creek, Denniston Creek, San Vicente Creek, and the San Francisco watershed lands in San Mateo County (see "Map 3. Golden Gate National Recreation Area Watersheds"). Many smaller watersheds drain the steep coastal bluffs directly into San Francisco Bay or the Pacific Ocean.

The National Park Service has been monitoring water quality and quantity in varying degrees within these aquatic systems. Most water quality sampling to date has focused on specific sites with known or suspected water quality impacts, including beach water quality monitoring. The National Park Service is presently designing a more comprehensive monitoring program that should identify any existing impacts and serve as baseline data to determine future impacts. For the lands in the southern part of the park (San Francisco and San Mateo counties), this work will also include an inventory of the largely unknown water resources. The monitoring will be coordinated through the San Francisco Bay Area National Parks Science and Learning, a network of regional national park sites. The National Park Service is currently participating in a stream flow monitoring program with stations on Lobos Creek, Redwood Creek, and Easkoot Creek.

Freshwater Resources

Surface Water. Watersheds in southern Marin County, such as Rodeo Lagoon and Tennessee Valley, are dominated by scrub and grassland vegetation with the majority of the trees in the riparian zone. These watersheds also have extensive stream and wetland complexes throughout their valley floors. Other watersheds, such as the Redwood Creek watershed, Bolinas Lagoon watershed, and the San Pedro Creek watershed, have denser forests beyond the riparian zone. These watersheds have steeper slopes and narrower valleys, and thus restrict the extent of wetlands.

Freshwater resources include streams, lakes, and freshwater wetlands. Most of the streams in the park are not large and their tributaries are frequently ephemeral. The overall condition of these resources results from more than a century of intensive human use, combined with the instability associated with soil types and the highly active San Andreas Fault. The effects of past land use practices (development, logging, agriculture, and grazing) have changed watershed conditions and reduced habitat for many aquatic invertebrates, fish, and amphibians. Loss of native perennial vegetation, soil compaction and loss, hillside trailing, gullying, and incision of swales and meadows have changed the runoff patterns and reduced the capacity of the watershed to attenuate pollutant loading and surface runoff to streams. Dam construction, channelization, water diversions, and the increased water demands of growing urban areas have substantially altered fish passage, reduced available habitats, and reduced stream flows during summer-fall of dry years. Although land use practices having lesser impacts are being increasingly adopted by landowners, present land use continues to influence water quality conditions within many watersheds (NPS 2007a).

Map 3. Golden Gate National Recreation Area Watersheds

Macroinvertebrates are commonly used as indicators of water quality and functional status of freshwater streams, but to date macroinvertebrate sampling has been infrequent and inconsistent across sites. Coho salmon have been more consistently monitored and their use as an indicator of stream condition is being evaluated (NPS 2007a).

Ponds and swales are also extremely important aquatic resources. As mentioned earlier, some of the largest endangered red-legged frog populations are in Point Reyes National Seashore and northern Golden Gate National Recreation Area where there are more than 120 breeding sites with a total adult population of several thousand frogs. Most of the breeding sites are artificial stock ponds constructed on lands that have been grazed by cattle for 150 years. There are also fairly large populations in some of the coastal drainages in San Mateo County just south of San Francisco in Golden Gate National Recreation Area (NPS 2007a).

The U.S. Geological Survey also monitored sediment and stream flow in Audubon Canyon and Morses Creek (near Bolinas) between 1967 and 1969. University of California Berkeley staff monitored Lone Tree Creek (south of Stinson Beach) between 1972 and 1974. Stream gauges were installed by the National Park Service at Redwood Creek (State Route 1 Bridge) and Easkoot Creek. Because of high toxic nutrient loads, algal blooms have occurred in Rodeo Lagoon. In addition to nutrient issues, Rodeo Lagoon sediments may contain elevated amounts of copper from copper sulfate (algaecide) treatment. Rodeo Lagoon sediments may contain elevated amounts of metals from past and current activities (NPS 2005a).

Due to its relatively small size, Alcatraz Island does not have streams—only ephemeral drainages that flow during rainfall.

Marin County Watersheds. Most Marin County watersheds drain to the Pacific Ocean. Watersheds relevant to park lands include Bolinas Lagoon, Redwood Creek, Marin Headlands, and others. The Bolinas Lagoon watershed extends from the Bolinas Ridges west to Inverness Ridge. Two-thirds of this watershed is in public ownership. Streams within this watershed are steep and flow through the highly erodible Franciscan Complex. The Redwood Creek watershed extends from the peaks of Mount Tamalpais, through Muir Woods National Monument, to the Pacific Ocean at Muir Beach— 95% of the watershed is owned and managed by public agencies. Several threatened wildlife species also occur in the watershed, including coho salmon (*Oncorhynchus kisutch*), steelhead trout (*Oncorhynchus mykiss*), California red-legged frog (*Rana draytonii*), and the northern spotted owl (*Strix occidentalis caurina*).

In addition to draining into the Pacific Ocean and San Francisco Bay, the Marin Headlands drain into Rodeo Lagoon, which provides marine habitat, water recreation, saltwater habitat, and wildlife habitat. Rodeo Lagoon is a significant wetland/estuarine resource that provides important habitat for marine birds and other species including the red-legged frog and tidewater goby (NPS 2005a).

San Francisco City and County Watersheds. The majority of the watersheds in San Francisco are highly urbanized; their boundaries have been modified by storm drainage projects and other urban infrastructure. The National Park Service manages lands in San Francisco draining to San Francisco Bay, Golden Gate Channel, and the Pacific Ocean. Tennessee Hollow, managed by the Presidio Trust, and Lobos Creek, which is in Presidio areas A and B, remain in a relatively nonurban state and are significant water resources of the park. The Tennessee Hollow stream in the Presidio East watershed is the main freshwater source for Crissy Field marsh, a recently completed wetland restoration project. Lobos Creek, in the Presidio West watershed, is the main water supply for the Presidio (NPS 2005a).

Although small, this spring-fed creek has the highest summer base flows in the park.

San Mateo County Watersheds. The watersheds in San Mateo County have not been comprehensively studied due to piecemeal land management by various agencies and private holdings. The watersheds that wholly or partly contain park land include Milagra, between Sweeney and Milagra; Sweeney; San Pedro Creek; Crystal Springs (part of the larger San Francisco watershed); and West Union / San Francisquito Creek. The 23-square-mile San Francisco watershed is owned and managed by the San Francisco Public Utilities Commission and is part of the water supply storage for the City and County of San Francisco. This watershed includes San Andreas Lake, Crystal Springs, Pilarcitos Lake, and a portion of Pilarcitos Creek watershed. The San Pedro Creek watershed drains portions of the San Francisco watershed lands and Picardo Ranch. The West Union Creek watershed contains a tributary to Searsville Lake that drains the Phleger Estate at the south end of Golden Gate National Recreation Area (NPS 2005a).

Groundwater

Marin County. The underlying Franciscan bedrock is relatively impermeable in Marin County, creating a perched water table. Numerous springs throughout the watershed feed Rodeo Creek well into the summer months. The total volume of water stored in the aquifer is unknown. No wells are in operation within NPS-managed lands in Marin County. The water table is tidally influenced in the lower areas such as Fort Baker (NPS 2007b).

San Francisco County. Groundwater sources in San Francisco County comprise shallow unconsolidated alluvium underlain by less permeable bedrock of the Franciscan Complex. Average precipitation is approximately 24 inches per year, but due to high impervious cover rates, little infiltration occurs. The primary water-bearing formations are composed of unconsolidated sediments and include alluvial fan deposits, beach and dune sands, undifferentiated alluvium, and artificial fill. Groundwater within San Francisco County is subject to high concentrations of nitrates and elevated chloride, boron, and total dissolved solids concentrations. High nitrate levels are attributed to groundwater recharge from sewer pipe leakage and possibly to fertilizer introduced by irrigation return flows. Elevated chloride and total dissolved solids levels are most likely due to a combination of leaky sewer pipes, historic and current seawater intrusion, and connate water. Current groundwater usage in the city of San Francisco is primarily for irrigating parks and golf courses.

San Mateo County. Much of San Mateo County is in the large, productive Santa Clara Valley Groundwater Basin at the south end of San Francisco Bay. The northwest portion of the county is within the Westside Groundwater Basin, which includes the southwestern part of San Francisco. In the coastal areas of San Mateo County, the main groundwater sources are comparatively small coastal marine terrace and stream valley alluvial deposits.

Floodplains

Floodplains exist along streams and creeks throughout Golden Gate National Recreation Area and Muir Woods National Monument. In Marin County, 100-year floodplains run along Redwood Creek and Rodeo Creek. Park facilities at Stinson Beach (parking lots and picnic areas) and Muir Beach (parking lot and Pacific Way) are in the 100-year floodplain.

In San Mateo County, 100-year floodplains are along Denniston Creek, San Vicente Creek, and the Middle Fork of San Pedro Creek. The lower stables at the Rancho Corral de Tierra property are in the San Vicente Creek 100-year floodplain.

Water Quality

The size and nature of the park (including high visitor use, the urban interface, and multitude of land uses) create several issues related to water quality. Accelerated erosion due to roads, trails, and other uses and developments threatens the sediment balance and ecological health of several watersheds. Grazing is no longer allowed on NPS-managed lands in Golden Gate National Recreation Area (NPS 1999b), but some of the impacts remain. Bacteria and nutrient inputs from equestrian operations, pet waste, agricultural operations, and potentially from sewer and septic systems can affect wildlife and public health as well as the overall ecological balance of water resources. Alteration of channels (including dams and culverts) affects the ecological health of park watersheds. These primary issues occur to varying extents within multiple park watersheds (NPS 2005a).

Many park water quality issues are related to facilities and structures. A roads and trails inventory exists and many structures are documented in the maintenance division's facilities database. However, a comprehensive inventory of park facilities and structures (including dams, culverts, and outfalls) has not been conducted (NPS 2005a).

Work is in progress to more thoroughly document facilities, roads and trails, and other water quality threats. For example, for the Redwood Creek watershed, a sediment budget study and a report of all sediment sources in the watershed were completed. Trail maps are being updated for the park and erosion surveys continue throughout the Marin Headlands. A dam inventory will be included in an upcoming "Water Quality Data Inventory and Analysis Report." Culvert mapping has occurred in Rodeo Valley (NPS 2005a).

Golden Gate National Recreation Area has a long history of water quality problems due to its proximity to urban and rural land uses. The park's surface waters and groundwater provide important beneficial uses that serve as a basis for establishing water quality objectives and discharge prohibitions by the California State Water Quality Control Board and the Environmental Protection Agency. These "beneficial" uses include agricultural supply, cold freshwater habitat, fish migration, municipal and domestic water supply, preservation of rare and endangered species, contact water recreation, noncontact water recreation, shellfish harvesting, fish spawning, warm freshwater habitat, and wildlife habitat. Additional beneficial uses for the Pacific Ocean include commercial and sport fishing, industrial service supply, and marine habitat. Some of the external issues facing the park have to do with balancing the historical and cultural traditions of ranching and dairy establishments with the high water quality needed for endangered species such as coho salmon, steelhead trout, California freshwater shrimp, and California red-legged frogs. In the park, particularly in areas south of the Golden Gate, the primary issues are stormwater discharge and legacy contaminants from abandoned military installations (NPS 2007a).

According to the California State Water Quality Control Board, eight areas (three creeks, three bays, and two beaches within the park) are listed as impaired according to the EPA list of impaired waters (the 303d List) (see table 3). The San Francisco Regional Water Quality Control Board has established a time line for development of total maximum daily loads associated with the highest priority impairment listings. The National Park Service is currently working with state and local agencies to develop and implement monitoring and enhancement efforts to address additional impairment issues. Additional water quality programs are associated with the three counties within Region 2: Marin, San Francisco, and San Mateo. Water districts and some watershed groups also monitor water quality (NPS 2007a). Water quality monitoring in coastal areas at Rancho Corral De Tierra has also been prepared by San Mateo County

Resources District (Critical Coastal Areas) through volunteers and tenants over the years.

Near-shore water quality has rarely been monitored by the parks, while freshwater and beach resources are measured principally in areas where problems have been identified. This lack of a probabilistic (randomized) water sampling program means that generalizations should be made with care; a broad summary of park water quality, or even watershed water quality, is likely to overstate problems and overemphasize freshwater resources (NPS 2007a).

Marin Headlands / Redwood Creek / Stinson Beach / Bolinas Lagoon Areas. Short-term data sets also exist for Rodeo Creek and Tennessee Valley (1994–1996). Rodeo Creek and Tennessee Valley were monitored along with Green Gulch between 1998 and 2001 as part of intensive sampling related to stable operations and other potential sources of bacteria and nutrients. Parameters typically monitored included flow (although flow data has been sporadic), pH, temperature, dissolved oxygen, conductivity, biochemical oxygen demand, salinity, total suspended solids, fecal and total coliforms, nitrates, ammonia, phosphates, total phosphorus (Total P), metals (emphasis on copper), methylene blue active substance (MBAS), and chloride. Not all parameters were monitored at all sites (NPS 2005a).

Water quality monitoring has been conducted in Redwood Creek and tributaries (including Kent Creek, Camino del Canyon, Banducci Tributary, Green Gulch, and Golden Gate Dairy Tributary) at numerous locations throughout the years. Several data sets exist for discrete (i.e., short-term, focused) monitoring projects. For example, monitoring by the National Park Service in the Redwood Creek watershed was conducted in 1986, 1988, 1990 to1991, and 1993 to 1996. Much of the water quality monitoring within the park has focused on lower Redwood Creek due to concerns related to nutrient and bacteria inputs in this locale, including recent data related to the Golden Gate Dairy and Big Lagoon (NPS 2005a).

The U.S. Geological Survey also monitored sediment and stream flow in Audubon Canyon and Morses Creek (near Bolinas) between 1967 and 1969. The University of California at Berkeley monitored Lone Tree Creek (south of Stinson Beach) between 1972 and 1974. Stream gauges were installed by the National Park Service at Redwood Creek (State Route 1 Bridge) and Easkoot Creek (NPS 2005a).

Consultants, universities, the U.S. Geological Survey, and other entities have also conducted monitoring. For example, the Stinson Beach County Water Agency currently monitors Easkoot Creek for fecal coliform bacteria. Limited monitoring has been conducted in Oakwood Valley and Nyhan Creek as part of an overall stormwater monitoring project that includes Redwood Creek, Tennessee Valley, and Rodeo Creek (NPS 2005a).

Flow monitoring by various entities, including the National Park Service, the U.S. Geological Survey, local universities, and consultants, has also been conducted. Flow monitoring sites have typically corresponded with water quality monitoring sites and include the Redwood Creek watershed (including Camino del Canyon, Kent Creek, Banducci Tributary, and Green Gulch Creek) as well as Easkoot Creek, Rodeo Creek, and Tennessee Valley.

TABLE 4. IMPAIRED WATER BODIES WITHIN POINT REYES NATIONAL SEASHORE AND GOLDEN GATE NATIONAL RECREATION AREA AS INDICATED FROM THE 2006 303D LIST

Water Body	Park Unit	Pollutant
Lagunitas Creek	Point Reyes NS, Golden Gate NRA	Sediment, Nutrients
Richardson Bay*	Golden Gate NRA	High Coliform, Chlordane, DDT, Dieldrin, Dioxin, Furan compounds, Mercury, Polychlorinated Biphenyls (PCBs), Nonnative Species
San Francisco Bay	Golden Gate NRA	Chlordane, DDT, Dieldrin, Mercury, PCBs, Polycyclic Aromoatic Hydrocarbon (PAHs), Nickel, Furan compounds, Nonnative Species, Dioxin, Selenium
San Francisquito Creek	Golden Gate NRA	Sediment
San Pedro Creek	Golden Gate NRA	High Coliform
Tomales Bay	Pointe Reyes NS, Golden Gate NRA	Sediment, Nutrients, Mercury
Pacific Ocean at Baker Beach	Golden Gate NRA	Indicator Bacteria
Pacific Ocean at Muir Beach	Golden Gate NRA	Indicator Bacteria

Source: San Francisco Water Quality Control Board 2009 adapted from 2006 Clean Water Act, Section 303d List.
* Note: Richardson Bay is not within Golden Gate NRA, although it does receive a relatively small volume of surface water run-off from the park.

San Francisco and San Mateo Counties. Water quality monitoring has been conducted periodically at the Presidio for several years. Until recently, however, no monitoring of surface water had been conducted by the National Park Service in southern Golden Gate National Recreation Area lands.

At Lobos Creek in the Presidio, the Urban Watershed Project, a nonprofit group, has conducted fecal coliform monitoring through a contract with the Presidio Trust. The City and County of San Francisco also recently conducted monitoring in Lobos Creek. Limited sampling of Lobos Creek was also conducted through the Environmental Remediation Program. Likewise, basic water quality parameters have been collected in Tennessee Hollow by the Urban Watershed Project, funded by the Presidio Trust and by the National Park Service at the Crissy Field marsh. The Presidio Trust also regularly tests water quality throughout trust-managed watersheds. Some limited water quality monitoring has been conducted within the

West Union / San Francisquito Creek watershed (West Union Creek is within this watershed), but no monitoring has been conducted on NPS lands. The San Francisquito Creek Watershed Council is actively involved in management and monitoring of this watershed. Through the watershed council, consultants have monitored the Bear Creek watershed (including West Union Creek). However, no sites have been found within Phleger Estate or the adjacent county park (NPS 2005a). San Francisquito Creek is listed on the section 303d list as being impaired by sediment. Concerns in West Union Creek, a San Francisquito Creek tributary within Phleger Estate, include erosion and runoff from trails. Landslides and substantial bank erosion have been observed (NPS 2005a).

Issues in Milagra, Sanchez, and Calera creeks are mostly unknown due to the lack of water quality data. However, suspected issues in these urban creeks include fertilizer or pesticide runoff from lawns and a golf course. In addition, pet waste, oil and chemical runoff from roads, and bacteria and nutrient inputs from leaky sewer pipes are also suspected concerns (NPS 2005a).

Marine Resources

Marine Environment – Regional Overview

The Golden Gate National Recreation Area coastal waters include coastal and marine habitats of central and northern California, which overlap with portions of the Gulf of the Farallones National Marine Sanctuary and Monterey Bay National Marine Sanctuary. The area shares many other features with the sanctuaries due to its proximity and the influence of similar currents, seasonal upwelling, and weather patterns. Geological features include a broad continental shelf; rocky shores; sandy beaches; coastal estuaries such as San Francisco Bay, Elkhorn Slough, and Tomales Bay; offshore banks; and the sloping edges of the continental shelf, dissected by deepwater canyons such as the Monterey Submarine Canyon (NMS and NOAA 2006).

This unique combination of oceanographic conditions and undersea topography make the area rich and diverse in a variety of marine species, including a wide array of temperate cold-water species and occasional influxes of warm-water species. The species diversity is directly related to the diversity of habitats and oceanic conditions, which are described in the following section, and the location of the sanctuaries within a broad transition zone providing a complex gradient of changing environments in which the relative proportions of species changes from north to south (NMS and NOAA 2006).

The species north of Point Conception, an area encompassing the entire study region and extending through Washington State, are part of the Oregonian biogeographic province. The relative amount and location of upwelling and downwelling and, consequently, the amount of productivity seen along the coast, are affected by seasonal weather patterns and the influence of the California and Davidson currents. The distribution of each species in the ocean is determined by a multitude of factors, including temperature, salinity, oxygen content, nutrient availability, current speed and direction, species interaction, frequency of perturbation, and food availability (NMS and NOAA 2006).

Habitats

The nearshore marine environment includes bay and estuarine habitats created by mudflats, tidal wetlands, and rocky shorelines. It extends through the intertidal to the subtidal zone of the continental shelf. This shelf extends far from the coast because upwelling occurs near the shore—the coastal zone offers a relatively shallow, highly productive habitat for fish, invertebrates, marine mammals, and seabirds. Many portions of the park's subtidal zone overlap with the federally protected Gulf of the

Farallones National Marine Sanctuary to the north and the Monterey Bay National Marine Sanctuary to the south. The area is considered a biological hot spot; data that is available for some species (seals, invertebrates (abalone), fish (rockfish), and shorebirds) indicate that most populations are slowly recovering from historic declines. Rocky and sandy substrates predominate with kelp communities occurring in scattered areas predominantly along the Point Reyes National Seashore and Golden Gate National Recreation Area coastlines north of San Francisco Bay. Research on physical processes is underway with promising new approaches for coastal benthic mapping, such as multibeam sonar, helping to elucidate nearshore habitat complexity. This knowledge is important for resource assessments as an aid to find and predict species distributions (NPS 2007a).

Along the open coast, intertidal habitats are likely the most heavily impacted aquatic areas. Despite park protection, these habitats are impacted by recreational activities including boating, fishing, and hiking; park operations (beach cleaning); and nonpark facilities and activities (sand movement by the City of San Francisco). Substantial impacts also occur from previously constructed facilities and loss of marine/estuarine habitats from filling (e.g., historic Crissy Field marsh, riprap, and seawalls along the San Francisco shoreline and Fort Baker marsh). The principal water quality threats include bacterial and nutrient pollution (ranches, dairies, septic, and stormwater discharges), occasional oil spills from offshore tankers, and legacy military landfills. Although beach sampling and damage incident reports have identified many of these problems, the extent of the impacts on intertidal organisms is not well studied (NPS 2007a).

Estuarine Resources. Approximately 59 miles of ocean and bay coastline are included in Golden Gate National Recreation Area (NPS 2007a). Coastal and bay resources comprise biologically diverse and complex ecosystems that contain a rich array of marine invertebrates and algae. Intertidal communities within or adjacent to the boundaries include islands, islets, reefs, rocks, straits, lagoons, mudflats, beaches, piers, wharves, the Gulf of the Farallones, and the San Francisco Bay Estuary (NPS 1999b).

Golden Gate National Recreation Area estuaries, bays, and lagoons have endured considerable physical disturbance and pollution due to their proximity to the highly urbanized city of San Francisco. Some areas were heavily modified in past eras, causing major changes in habitat structure, including Big Lagoon at Redwood Creek, Horseshoe Bay, and Crissy Field. Restoration is either planned or already accomplished in these areas. In the recent past, the San Francisco Peninsula experienced substantial bacterial pollution from stormwater runoff; however, treatment since the 1990s has significantly reduced pollution levels. High levels of PCBs, PAHs and heavy metals are still major issues facing San Francisco Bay coastal waters, and continued restoration is likely to improve local water quality conditions in some areas like the nearshore Presidio (NPS 2007a).

While active restoration efforts are reclaiming wetlands, some bays are accumulating too much sediment. Although sedimentation is a natural process, Tomales Bay, Drakes Bay, and Bolinas Lagoon appear to be experiencing higher than normal sedimentation rates. The evaluation of these complex tidal system dynamics and the possible impacts due to climate change will depend on accurate habitat mapping procedures. Currently, there is significant emphasis in Point Reyes National Seashore and Golden Gate National Recreation Area on mapping wetland extent and quality; however, these efforts are not yet completed and historical information on wetland habitats is limited. Where efforts are being made to restore tidal marsh habitat, such as at Redwood Creek and the Giacomini Ranch, understanding of these systems is improving (NPS 2007a).

Intertidal Zone. Intertidal habitat, by definition, is found between the lowest and highest tidal level. This transitional area between sea and land is the strip of shore between the uppermost surfaces exposed to wave action during high tides and the lowermost areas exposed to air during low tides. Intertidal habitats vary in type of material and the degree of exposure to surf. Bottom habitat types include those of fine mud, sand, gravel, shale, cobble, boulders, and bedrock. Intertidal habitat within Golden Gate National Recreation Area includes rocky and sandy beaches (NMS and NOAA 2006).

The south side of Alcatraz Island contains a sheer rock wall that terminates on a narrow rock reef about 30 to 50 feet wide. This narrow intertidal reef extends for only a short distance (about 660 feet), but represents one of the few rocky reefs in San Francisco Bay. Other rocky intertidal portions of the island are composed of riprap and rubble similar to the shorelines of much of San Francisco Bay.

Subtidal and Nearshore Waters. Subtidal and nearshore waters refer to the area from the lowest low tide line to the point where the sea floor drops and the deeper offshore waters begin. This is on the land side of the continental shelf slope transition. The substrate can be sand, mud, or rock, providing essential habitat for various algae, zooplankton, and phytoplankton species (NMS and NOAA 2006). The nearshore coastal environment is highly variable along the park's shorelines, with a complex spatial distribution of marine resources due to diverse lithologies, active tectonic and geomorphic processes, topographic relief, and dynamic nearshore currents. This physical diversity coupled with high productivity results in an equally diverse distribution of organisms (NPS 2007a).

Because the continental shelf extends far from the coast and upwelling occurs nearshore, the coastal portion of the park offers a shallow, highly productive habitat for seabirds, fish, and marine mammals. Currents, bathymetry (depth), and substrate determine the distribution of marine communities in the subtidal zone. These factors, in turn, affect more inland habitats, such as the intertidal zone, bays, and estuaries, to varying degrees. Although much of this discussion focuses on coastal subtidal areas, it should be noted that estuarine areas also include subtidal areas. Subtidal habitats are particularly threatened in San Francisco Bay and the surrounding coastline due to intense coastal development and expansion of marine transportation systems. Dredging for port modernization, sand mining, and alteration of rocky reef habitats near navigation channels can severely impact subtidal habitats (NPS 2007a).

Continental Shelf and Slope. The continental slope, which is still considered part of the continent, together with the continental shelf, is called the continental margin. Large areas of the Golden Gate National Recreation Area waters (and state lands lease waters) overlap with Gulf of the Farallones National Marine Sanctuary and Monterey Bay National Marine Sanctuary; these waters cover both the continental shelf and slope. The overlap occurs in Tomales Bay, and from Stinson Beach to Point Bonita. From the shoreline to a depth of about 328 to 492 feet, the shelf is nearly horizontal, with rocky outcrops, gravel, sand, clay, silt, and deposits of broken shells covering it. About 25 miles from the coast, the seafloor drops off, creating the continental slope with a grade of about 3 degrees. The slope extends to about 2 miles deep and is covered with uniform sandy sediment (NMS and NOAA 2006).

BIOLOGICAL RESOURCES

Habitat (vegetation and wildlife)

Marine and Estuarine

Intertidal Zone. The intertidal habitat (the area between high tide and low tide lines) is

biologically rich, supporting diverse assemblages of organisms. It is characterized by extreme conditions caused by wind, waves, and the fluctuation of tides. The animals inhabiting intertidal zones are subject to periodic immersion in water, followed by exposure to air. They must withstand varying degrees of wave shock, dramatic temperature changes, changes in moisture, attacks from both marine and terrestrial predators, and human-caused effects such as trampling and collecting (NMS and NOAA 2006).

Four zones of rocky intertidal organisms are traditionally associated with different tidal heights: splash, high intertidal, mid-intertidal, and low intertidal. Species distributions are restricted according to physiological tolerance along the thermal and moisture gradient in the intertidal zone. The splash zone is almost always exposed to air, and has relatively few species. The high intertidal zone is exposed to air for long periods twice a day. The mid-intertidal zone is exposed to air briefly once or twice a day, and the low intertidal zone is exposed only during the lowest tides (NMS and NOAA 2006).

On unconsolidated muddy or sandy shores, algae are rare; benthic diatoms are the only marine algae that may be present. On sandy beaches, much of the invertebrate life, such as worms, crustaceans, snails, and clams, dwell under unconsolidated substrate. Common crustaceans and mollusks include the beach hopper (*Megalorchestia californiana*), spiny mole crab (*Blepharipoda occidentalis*), and sand crab (*Emerita analoga*). Common marine worms include *Anatides groenlandica, Eteone dilate,* and *Euzonus* spp (NMS and NOAA 2006).

Rocky shores support a richer assortment of plants and animals. Algae include numerous species of green, brown, and red algae, as well as beds of surfgrass. A wide variety of invertebrates, including anemones, barnacles, limpets, and mussels, compete for space with algae in the intertidal zone. Mobile invertebrates, such as sea stars, snails, and crabs, often hide in crevices or under rocks, emerging to graze on algae or prey on other animals. Small fishes may also live in the small pools of water that fill up with each tidal cycle. Typical intertidal invertebrate species of central and northern California include lined shore crab (*Pachygrapsus crassipes*), purple shore crab (*Hemigrapsus nudus*), isopods (*Idotea* spp.), California mussels (*Mytilus californianus*), periwinkles (*Littorina* spp.), lemon nudibranch (*Anisodoris nobilis*), troglodyte chiton (*Nuttallina californica*), bat star (*Patiria miniata*), black turban snail (*Chlorostoma funebralis*), the giant green anemone (*Anthopleura xanthogrammica*), aggregating anemone (*Anthopleura elegantissima*), and other species of bryozoans, nudibranchs, sponges, and tunicates. Intertidal fishes, such as the crevice kelpfish (*Gibbonsia montereyensis*) and the tide pool sculpin (*Oligocottus maculosus*), are limited to tide pools or to passing through the intertidal zone at high tide (NMS and NOAA 2006).

Birds forage in the intertidal zone at low tide or nest and roost in the cliffs just above the shore or on nearshore islands off the Marin and San Mateo county coast. There are a great many species of shorebirds along the beaches, including sanderlings (*Calidris alba*), short-billed dowitchers (*Limnodromus griseus*), western gulls (*Larus occidentalis*), glaucous-winged gulls (*Larus glaucescens*), and California gulls (*Larus californicus*). Shorebirds, such as sanderlings and dowitchers, routinely forage in the receding surf, an indication that there are sand-dwelling crustaceans available. Another bird found in this area is the snowy plover (*Charadrius alexandrinus nivosus*) whose threatened status has resulted in some significant resource management actions in central California, including restrictions on access or types of use in some shoreline areas. In addition to the snowy plover, typical shorebird breeders in this habitat include the black oystercatcher (*Haematopus bachmani*), killdeer (*Charadrius vociferus*), sanderlings, willets (*Catoptrophorus semipalmatus*), and marbled godwits (*Limosa fedoa*). Brown pelicans (*Pelecanus occidentalis*), surf scoters

(*Melanitta perspicillata*), grebes (family *Podicipedidae*), cormorants (*Phalacrocorax* spp.), and many other seabird species can be found in water beyond the breaking waves or flying through the area. Caspian terns (*Sterna caspia*), Forster terns (*Sterna forsteri*), and whimbrels (*Numenius phaeopus*) are some of the summer migrants that forage along the coastal beaches. Winter migrants include loons (*Gavia* spp.), willets, black-bellied plovers (*Pluvialis squatarola*), godwits (*Limosa* spp.), and turnstones (*Arenaria melanocephala*) (NMS and NOAA 2006).

Marine mammals are also found in this habitat. Pacific harbor seals (*Phoca vitulina*), and California sea lions (*Zalophus californianus*) are frequently seen seaward of the surf zone; sea otters (*Enhydra lutris*) and Steller sea lions (*Eumetopias jubatus*) are occasional visitors. Seals and sea lions haul out on intertidal shores for warming and breeding (NMS and NOAA 2006).

At Alcatraz Island, the rocky intertidal community on the Alcatraz reef is characterized by attached flora and fauna such as rockweed (*Fucus gairdneri*), turfweed (*Endocladia muricata*), and barnacles. Areas with crevices and overhangs often harbor mobile species such as shore crabs and seastars.

Subtidal and Nearshore Waters

Subtidal habitats (depths below mean low water) and nearshore waters (shallow inshore waters of the continental shelf) support many different species. Krill (*euphausiids*) is a crucial or "keystone" species in the area. They are small, shrimp-like crustaceans that congregate in large dense masses called swarms or clouds. Two krill species form the primary forage for upper tropic levels in the adjacent sanctuary. Krill feed on phyto-plankton and are important in the food web because many other species feed on krill. Krill form a key trophic link in coastal upwelling systems between primary production and higher trophic level consumers. Most marine predators subsist at least part of the year on krill, which is the primary prey of 7 of the 10 most important commercial fishes on the central California coast. Krill are also important food sources for baleen whales and seabirds (NMS and NOAA 2006).

The nutrient-rich sanctuary waters near Golden Gate National Recreation Area provide forage for the largest concentration of breeding seabirds in the continental United States. More than 120 species of birds use these three sanctuaries for shelter, food, or as a migration corridor. Of these, over 40 species are known to use the sanctuary during their breeding season (NMS and NOAA 2006).

These same productive waters also support a variety of marine mammals, including gray whales (*Eschrichtius robustus*), humpback whales (*Megaptera novaeangliae*), blue whales (*Balaenoptera musculus*), Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena sinus*), Pacific white-sided dolphins (*Lagenorhynchus obliquidens*), northern right whale dolphins (*Lissodelphis borealis*), Risso's dolphins (*Grampus griseus*) and killer whales (*Orcinus orca*). Some species, such as the gray whale, are only seasonal migrants; others, such as the blue, humpback, and killer whale, travel to the area to feed. Other marine mammals, such as harbor seals and sea lions, can be found in these areas year-round (NMS and NOAA 2006).

Six species of pinnipeds, some of which are federal listed, are found in the waters offshore of the park. Pinnipeds spend a large amount of time in offshore waters or on offshore islands, but some of the rookeries (breeding places or breeding colonies usually crowded with the same species) and haul-out areas occur in this habitat. Species found in the area are California sea lion, Pacific harbor seal, Steller sea lion, northern elephant seal (*Mirounga angustirostris*), northern fur seal (*Callorhinus ursinus*), and on occasion, the Guadalupe fur seal (*Arctocephalus townsendi*). The various species have numerous seal

rookeries or colonies and are found at different times of the year, feeding on the abundant fish and invertebrate resources of the island shelves or hauling out on rocks and beaches (NMS and NOAA 2006).

A variety of fish species occur within these habitats, including rockfishes, cabezon, surfperch (family *Embiotocidae*), wrasses (family *Labridae*), and señorita (*Oxyjulius californica*). Commercially harvested species include salmon, tuna, crab, squid, and various rockfish. Salmon and crab fisheries are the most important fisheries in the sanctuaries. The West Coast Dungeness crab fishery is considered the most sustainable large-scale commercial crab fishery in the world. Both chinook and coho salmon are coastal migrants (NMS and NOAA 2006).

Kelp forests support a variety of species, including sea otters and sea urchins. Other marine mammals, such as harbor seals and California sea lions, are common in and around kelp forests, as are a variety of fishes such as the señorita, the kelp surfperch (*Brachyistius frenatus*), blue rockfish (*Sebastes mystinus*), blacksmith (*Chromis punctipinnis*), and olive rockfish (*S. serranoides*). The kelp canopy, stipes, and holdfasts increase the available habitat for nearshore species and offer protection to juvenile finfish. Bat star (*Asterina miniata*), sea lemon (*Anisidoris nobilis*), barnacles (*Balanus* spp.), red volcano sponge (*Acarnus erithacus*), and urchin are a few of the many types of invertebrates that inhabit the kelp forest and rocky subtidal habitats (NMS and NOAA 2006).

Golden Gate National Recreation Area contains areas of sandy beaches, some barely accessible narrow strips along the shoreline while others are large expanses readily accessed and heavily used by visitors. Beach wrack—a thick tangle of kelp and sea grass that washes ashore during high tides—supports an intricate food web and community. Until recently, beach wrack was removed from many park beaches; now this practice has been discontinued. Recreational activities on park beaches, unleashed dogs, and kayaks impact both shorebird and pinniped populations. Efforts to minimize disturbance during the past 5 to 10 years appear to have met with some success and certain species such as snowy plover and harbor seal populations seem stable after years of decline (NPS 2007a).

Although local data are not comprehensive, notable trends and observations for key indicators in California nearshore marine and estuarine habitats likely to occur in the parks include the following:

- a decline in populations of all California abalone
- northward spread of the ricketsial-like bacteria responsible for withering syndrome in black abalone, which was recently observed just south of Golden Gate National Recreation Area
- a decline in rockfish species such as bocaccio (*Sebastes paucispinus*)
- a decline in the extent of kelp forests caused by pollution, wave damage due to storms, and El Niño warming
- stable Dungeness crab populations as a result of successful fisheries management
- an increase in dune- and beach-dependent snowy plovers after substantial declines observed in the mid-1990s resulted in protective management
- stable population levels of harbor and elephant seals
- a decline in pelagic seabirds due to climate regime shifts and human disturbance, including bycatch, nest disturbance, and oil spills
- an increase in tidal marsh lands due to restoration activities and protective measures (NPS 2007a)

Estuarine and Lagoon

Estuaries and lagoons serve as important habitats for many fishes, birds, and mammals. They provide suitable habitat for reproduction, feeding, resting, and cover. Estuaries and lagoons support unique biological communities with both aquatic and terrestrial characteristics. Halophytic vegetation, such as pickleweed (*Allenrolfea occidentalis*), grows higher in the marsh where flooding occurs less frequently and salt may become concentrated. However, little vegetation can grow in areas characterized by high evaporation and high soil salinity. A diverse assemblage of wetland plants grows in areas near tidal creeks where fresh water input is high. As plant matter breaks down into detritus, it is consumed by various filter feeders, deposit feeders, and other omnivores and scavengers. These species, in turn, provide abundant food resources for other species of fish, birds, and mammals. Brackish water supports a distinctive assemblage of invertebrate and fish species, including the endangered tidewater goby (*Eucyclogobius newberryi*). Other estuarine species can include jacksmelt (*Atherinopsis californiensis*), Pacific sardine (*Sardinops sagax caerulea*), Pacific herring (*Clupea pallasii*), staghorn sculpins (*Leptocottus armatus*), several rockfishes, salmonids, and clupeids (*Clupeleonella* ssp.) (NMS and NOAA 2006).

The estuaries and bays of coastal California are part of the Pacific Flyway, one of the four principal bird migration routes in North America. San Francisco Bay supports a large number of migratory and resident birds. Also important for birds are Tomales Bay, Bolinas Lagoon, Pescadero Marsh, and Elkhorn Slough. Bolinas Lagoon and Tomales Bay are designated wetlands of significant international importance under the Convention on Wetlands. Marine mammals, including harbor seal, harbor porpoise, and sea otter, occur in these bays (NMS and NOAA 2006).

Seagrass beds, which occur in the bays and lagoons, are highly productive habitats that support a unique assemblage of invertebrates and fishes. Many fishes, including Pacific herring, spawn in seagrass beds among other habitats. The structure of seagrass beds provides protection from predation for juvenile invertebrates and fishes. Large numbers of shorebirds and waterfowl are attracted to seagrass beds, where they feed on seagrass, fishes, and invertebrate eggs and young (NMS and NOAA 2006).

The marine environment around Slide Ranch includes exposed outer coastlands with a rich display of sponges, hydroids, bryozoans, and tunicates. Muir Beach is also home to a variety of submarine sponges, hydroids, bryozoans, and tunicates. Tennessee Cove contains unique geological features including the only California central coast display of highly polished and fossilized shells of *Collisella digitalis*. Sea caves contain unusually large isopod (*Ligia occidentalis*) specimens. Kirby Cove contains giant isopods of unusually large size and high densities of starfish (*Pisaster ochraceous* and *Patiria miniata*). Bird Island, with its guano-covered sea stack, produces abnormally sized marine invertebrates and plants, including large California mussels and surfgrass, marine kelp and giant kelp, sea anemones and purple seastar, as well as high densities of marine copepod (*Tigriopus californica*). The underwater marine life is abundant and includes high densities of sponges, hydroids, bryozoans, and tunicates. The Alcatraz intertidal zone ranks high in its abundance and diversity of marine algae (NPS 1999b).

Estuaries, bays, and lagoons provide rich habitats including subtidal seagrasses, tidal mudflats, and marshes that support a rich diversity of wildlife. Past shoreline modifications, including wetland fill and seawalls, dramatically reduced the extent of tidal marsh within the park. Inherently lower rates of hydrologic mixing in estuaries and especially in lagoons, enhances their vulnerability to pollution and invasive species (NPS 2007a).

Although at much lower levels and not as well studied as in San Francisco Bay, invasive species are established in estuaries and lagoons in northern coastal areas of the park. Despite these threats, Tomales Bay and Drakes Estero are considered relatively pristine and support variable but healthy biological communities. Wetland restoration projects, such as the Muir Beach / Big Lagoon restoration projects will further enhance resource condition (NPS 2007a).

Due to its favorable currents and nearshore foraging areas, the waters around Alcatraz Island provide rich sources of food for the colonial waterbirds that nest on the island (NPS 2001). These waters are subject to the same influences as the rest of San Francisco Bay.

Benthic Communities

The benthic community is composed of organisms that live in and on the bottom of the ocean floor. Benthic species include worms, clams, crabs, lobsters, sponges, and other tiny organisms that live in the bottom sediments. Benthic species are divided into the filter feeders and the deposit feeders. Filter feeders filter their food by siphoning particles out of the water.

Various benthic habitats and substrates are found within the waters off Golden Gate National Recreation Area. In addition, benthic communities occur in a variety of the habitats described in this section, including subtidal rocky reefs, kelp forests, soft bottom habitats, and deep ocean floor habitats. The continental shelf descends gradually from the coast to the shelf break. Benthic communities along the continental shelf are covered in part by a layer of mud. Outcropping bedrock and sand cover the continental shelf at depths greater than 295 feet. Benthic organisms play a critical role and make up a diverse group that is a major link in the food chain (NMS and NOAA 2006).

Terrestrial/Freshwater

Plant Communities

The vegetation of Golden Gate National Recreation Area is a result of the juxtaposition of physical landforms and water masses and associated geology, climate, and history. The moist maritime climate along the coastline is a dominant influence, while the park's east-facing sites are subject to drier inland conditions. Distinct changes in soils from the rich conditions of the Franciscan *mélange* to the unique chemistry of serpentinitic outcrops have created a diverse mosaic of vegetation communities. Natural processes, including landslides, rainfall patterns, and fires, affect these patterns and add another layer of complexity to the system. Golden Gate National Recreation Area is known to support 572 native species, including 336 nonnative terrestrial plant species (NPS 2005a).

Alcatraz Island generally consists of grasses, shrubs, historic gardens, nonnative trees, and cliffs and other barren areas, along with buildings and other paved areas. Landscape vegetation consists of a diverse group of nonnative ornamental shrubs and trees, which provide the vegetation structure and habitat for wildlife on the island (NPS 2001).

Coastal Scrub and Chaparral. The coastal scrub community is dominated by coyote brush (*Baccharis pilularis*), California sagebrush (*Artemisia californica*), bush lupine (*Lupinus arboreus*), and poison oak (*Toxicodendron diversilobum*), with variations in dominant species based on moisture levels, soil types and slopes, and past land use history. This community intergrades and creates a mosaic with the grassland community and is found throughout the park from near sea level to 2,500 feet in elevation. The coastal scrub community includes a wide variety of native perennial forbs (*Lupinus albifrons* and others) and large numbers of nonnative species; at times it is dominated by nonnative shrubs such as French broom (*Genista monspessulana*) and thoroughwart

(*Ageratina adenophora*). Chaparral stands exist within the park, but are not all that abundant. Small communities of chaparral exist in Muir Woods National Monument and the Marin Headlands, as well as larger areas on Bolinas Ridge. There are several types of chaparral in the park, including chamise chaparral, ceanothus chaparral, and manzanita chaparral (NPS 2005a).

Grasslands. The grassland community at Golden Gate National Recreation Area extends from sea level to nearly 2,600 feet in elevation. It forms a mosaic with the coastal scrub community and mixed evergreen forests. The coastal prairie areas appear to have evolved under light seasonal grazing pressure from native tule elk and other herbivores with occasional fire events (NPS 2005a).

Pristine grassland was thought to have been composed of evenly spaced bunchgrasses with annual forbs occupying areas between tussocks. It has been shown that purple needlegrass (*Nasella pulchra*)—the California state grass—was a major dominant of that grassland type along with other perennial grasses. These grasslands have had the greatest disturbance of any natural habitat in this area. Four main factors have contributed to this disturbance: (1) an increase in livestock grazing pressures from nonnative cattle, sheep, and horses; (2) the introduction of highly competitive nonnative plants; (3) cultivation; and (4) the elimination of fire (NPS 2005a). Today, the grasslands are dominated by nonnative annual grasses and forbs adapted to Mediterranean conditions (NPS 2005a).

The extirpation of large native mammals, exclusion of grazing by native herbivores, and suppression of wildfires have caused a marked increase in acreage covered by coyote brush and the resulting coastal scrub community in the Bay Area. It should be noted that grassland and coastal scrub communities are a dynamic mosaic with changes in dominance over time, and in some areas these two communities are in equilibrium with no invasion occurring (NPS 2005a).

Riparian Forest and Scrub. These streamside forests and shrublands are dominated by broad-leaved deciduous trees or shrubs, most commonly willows (*Salix lasiolepis* or S. *lucida* ssp. *lasiandra*) and occasionally red alder (*Alnus rubra*). The understory is typically dense, with a variety of shrubs including native berries—native salmonberry (*Rubus spectabilis*), thimbleberry (*R. parvijlorus*), and California blackberry (*R. ursinus*)—as well as nonnative Himalayan blackberry and cape ivy. Numerous herbaceous species, including ferns, rushes, and sedges, dominate the shrub understory. Nonnative trees, including eucalypts (*Eucalyptus* spp.) and Monterey cypress (*Cupressus macrocarpa*), have become successfully established within the riparian forest strands in the park (NPS 2005a).

Douglas-fir and Coast Redwood. The majestic old-growth redwood forest at Muir Woods National Monument, with Redwood Creek peacefully flowing through groves of tall trees, attracts much visitor attention. This tranquil scene is a rare sight in proximity to a large metropolitan area. Many species contribute to this ecosystem. Major overstory and understory trees include coast redwood (*Sequoia sempervirens*), Douglas-fir (*Pseudotsuga menziesii*), California bay laurel (*Umbellularia calijornica*), tanoak (*Lithocarpus densiflorus*), California hazel (*Corylus calijornica*), and madrone (*Arbutus menziesii*) (NPS 2005a). Douglas-fir communities are found on Bolinas Ridge and within Muir Woods National Monument. The communities on Bolinas Ridge have been previously logged.

Nonnative Evergreen Forest. Many nonnative tree species have become established in Golden Gate National Recreation Area through both intentional and unintentional introductions, including ornamental plantings, plantings for windbreaks or shade for pastures, and escapes from cultivated and developed areas.

Many of these trees—including a number of eucalypts (*Eucalyptus* spp.), acacia (*Acacia* spp.), Monterey pine (*Pinus radiata*), and Monterey cypress (*Cupressus macrocarpa*)—have invaded native communities. Most are very flammable or substantially change the fire potential in areas that otherwise would support low-intensity or minimal fires such as the coastal scrub and grassland areas of the park (NPS 2005a).

Plant Communities of Alcatraz Island. Before occupation by Europeans, Alcatraz Island was sparsely vegetated. Trees and shrubs were planted as part of military fort and penitentiary life on the island. Soils brought from the mainland and surrounding islands in the bay contained seeds of native plants, including coyote brush, California poppy (*Eschcholzia californica*), and California blackberry (*Rubus ursinus*), which have become established on the island. Only about 5% of the island has native grasses or coastal scrub species; the rest is dominated by nonnative species (NPS 2001).

The landscape vegetation is nonnative, but it provides significant shelter and habitat on the island. Shrubs are common and include nonnative rose, mirrorbush, fig, blackberry, agave, Australian tea ivy, mimosa, plume acacia, Monterey cypress, and native coyote brush. A small stand of native grasses dominated by creeping wildrye (*Leymus triticoides*) is on the Northeast Perimeter Trail near the Power House complex. Another smaller stand is present in the Cistern area. Ruderal vegetation occurs along the edges of walkways, buildings, and building remains. Dominant species in these areas are wild oats, wild radish, mustard, and cheeseweed. Rocky cliffs and bluffs are found primarily along the island perimeter. The southwestern cliffs support various succulents, agave, sourgrass, sweet alyssum, wild radish, and large shrubs in areas where Brandt's cormorants, western gulls, and pigeon guillemots nest. These plants provide nesting material and protection for the birds (NPS 2001).

Wetlands. Herbaceous wetlands are known as emergent wetlands in the Cowardin wetlands classification system. They consist of a mix of low-growing species of native sedges (*Carex* spp.), rushes (*Juncus* spp.), and other wetland-dependent species (*Scirpus microcarpus, Typha* spp. *Cyperus eragrostis, Equisetum* spp.), as well as some nonnative species of grasses and forbs. The nonnative grasses include velvet grass (*Holcus lanatus*) and harding grass (*phalaris aquatica*) and the forbs include cape ivy (*Delairea odorata*) and vinca (*Vinca major* and *V. minor*). Also included are areas covered with various reeds along the shores of lagoons and ponds, herbaceous strips of vegetation along perennial and ephemeral stream courses, and isolated wetland patches where seeps spring from the hill slopes. Some special status plant species—locally to regionally rare—occur within this community (NPS 2005a).

Golden Gate National Recreation Area has abundant wetland resources, including wet meadows, seeps, streams, riparian forests, lakes, ponds, and lagoons. Wetlands, according to the definition developed by the U.S. Fish and Wildlife Service (USFWS) and adopted by the National Park Service, are transitional lands between terrestrial and aquatic systems, where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands generally include marshes, riparian zones, mudflats, rocky intertidal zones, and gravel beaches. Deepwater habitats such as rivers, lakes, and estuaries are not technically wetlands, but are classified as aquatic sites using the same classification system. Wetland ecosystems act to buffer hydrologic and erosional cycles, control and regulate cycles of nitrogen and other key nutrients, and create valuable habitat for animal species.

The wetlands in Golden Gate National Recreation Area have been field-mapped in several watersheds, including the Rodeo Creek watershed, the Presidio of San Francisco, and portions of the Redwood Creek and Bolinas Lagoon watersheds. The remainder of the park has not been field-

mapped, but likely contains areas of wetland vegetation based on parkwide vegetation mapping results that need field verification. The majority of wetlands in Golden Gate National Recreation Area are in the valley bottoms, with seeps and small intermittent streams reaching into the higher portions of the watersheds (NPS 2005a).

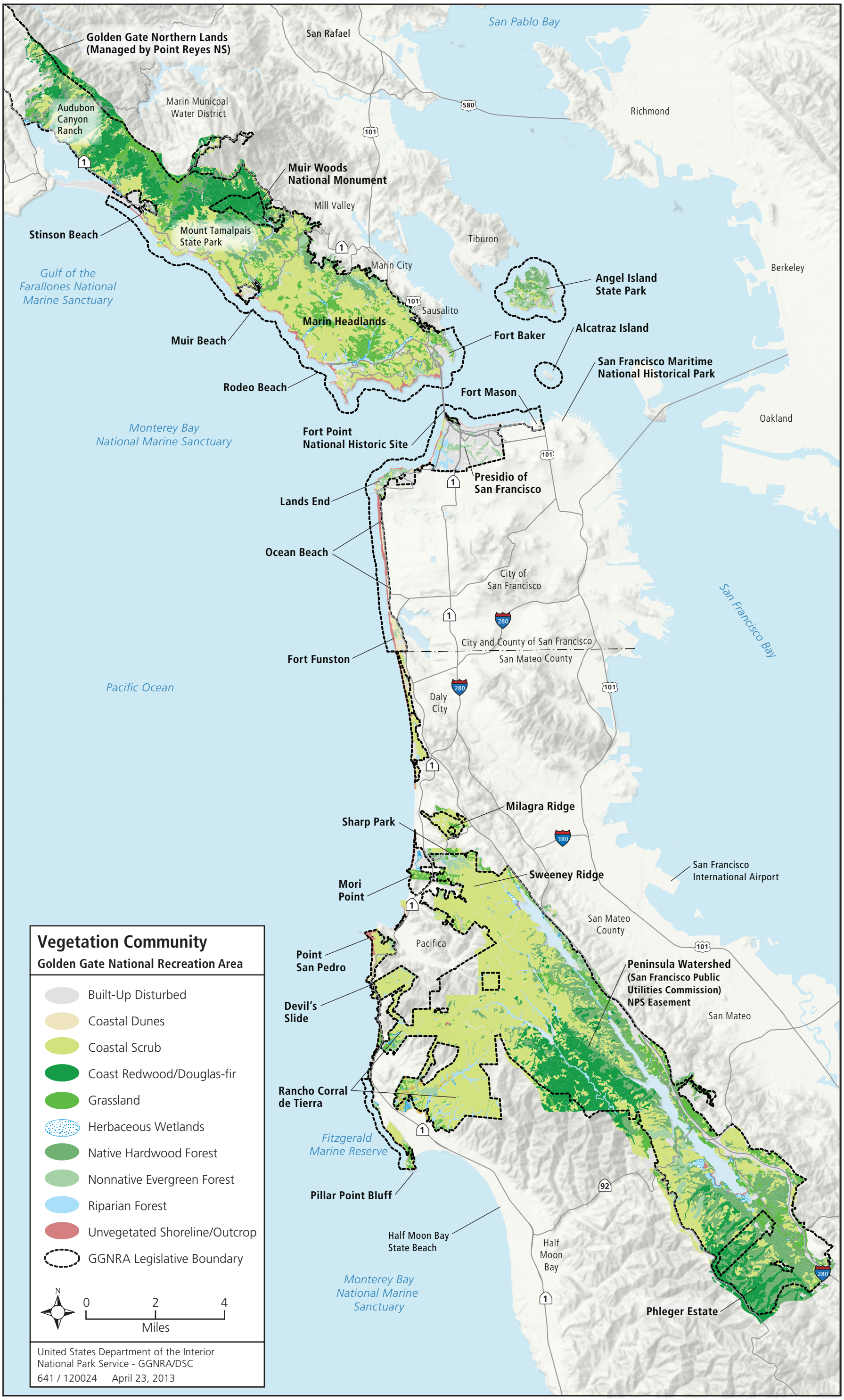
Wildlife

The entire park is included within the Central California Coast International Biosphere Region. The park's diverse habitats support a rich assemblage of wildlife. At least 387 vertebrate species are known to occur within park boundaries. Species lists compiled from a variety of sources and incomplete inventories include 11 amphibians, 20 reptiles, 53 fish, 53 mammals, and 250 birds. Terrestrial invertebrates in the park are less well known; however, two areas of the park (Marin Headlands and Milagra Ridge) support diverse butterfly populations. Wildlife habitats within the park include introduced eucalyptus and closed-cone Monterey pine and cypress forests; hardwood, mixed evergreen, Douglas-fir, redwood, and riparian forests; coastal scrub; annual and perennial grasslands; freshwater and saline wetlands and wet meadows; and estuarine, lacustrine, marine, and riverine aquatic habitats (NPS 2005a).

Alcatraz Island is a valuable natural habitat for colonial waterbirds due to favorable currents and nearshore foraging areas. The island supports a diverse assembly of marine and estuarine colonial nesting birds. Species of particular interest are black-crowned night herons, pigeon guillemots, Brandt's and pelagic cormorants, and western gulls (NPS 2001).

Mammals. Terrestrial habitats within the planning area support a diversity of mammals. Meso-carnivores, including the gray fox (*Urocyon cinereoargenteus*), bobcat (*Felis rufus*), and the recently reestablished coyote (*Canis latrans*), inhabit coastal scrub and grasslands. Mountain lions (*Felis concolor*) have been sighted in some undeveloped areas of the park. These carnivores feed on a variety of small and large mammals such as the Pacific black-tailed deer (*Odocoileus hemionus columbianus*), broad-footed mole (*Scapanus larimanus*), pocket gopher (*Thomomys bottae*), deer mouse (*Peromyscus maniculatus*), western harvest mouse (*Reithrodontomus megalotis*), California vole (*Microtus californicus*), and brush rabbit (*Sylvilagus bachmani*). Badgers (*Taxidea taxus*) are also infrequently encountered. Some species, such as the western harvest mouse, appear to be restricted to areas where native perennial grasses persist (NPS 2005a).

In addition to many of the aforementioned mammals, Muir Woods National Monument and other forested areas within the planning area support vagrant shrew (*Sorex vagrans*), Trowbridge's shrew (*Sorex trowbridgii*), Sonoma chipmunk (*Tamius sonomae*), western gray squirrel (*Sciurus griseus*), opossum (*Didelphis virginiana*), and dusky-footed woodrats (*Neotoma fuscipes*). Other mammalian carnivores include the raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), and spotted skunk (*Spilogale gracilis*), long-tailed weasel (*Mustela frenata*), and the recently returned river otter (*Lontra Canadensis*) (NPS 2005a).



Map 4. Vegetation Community

Seventeen species of bats have been detected within the park. Ten species of bats have been documented in Muir Woods National Monument, including four at-risk species: Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), fringed myotis (*Myotis thysanodes*), long-legged myotis (*Myotis volans*), and Yuma myotis (*Myotis yumanensis*). Many of the bats have been observed using redwood fire-scar cavities for roosting. At the Marin Headlands, several historic World War II structures were found to be occupied by the Townsend's western big-eared bat and the Yuma myotis. The Brazilian free-tailed bat (*Tadarida brasiliensis*) forages over coastal scrub habitat within the Marin Headlands (NPS 2005a).

Isolated coastal rocks, beaches, and lagoon sand flats in the park serve as haul-outs for harbor seals (*Phoca vitulina*) and California sea lions (*Zalophus californianus*). Up to 250 harbor seals haul out in Point Bonita Cove along the slopes of the Marin Headlands. As the northern elephant seal (*Mirounga angustirostris*) population rapidly increases, the seals are encountered more frequently on sandy beaches throughout the region. California gray whales (*Eschrichtius robustus*), humpback whales (*Megaptera novaeagliae*), and harbor porpoises (*Phocoena phocoena*) use offshore waters; young whales occasionally wander into San Francisco Bay. Southern sea otters (*Enhydra lutris nereis*) are infrequently seen offshore with numbers increasing as the population spreads north (NPS 2005a).

Alcatraz Island is home to deer mice and several bat species. Small numbers of seals and sea lions haul out on the island's rocky areas (NPS 2001).

Birds. Golden Gate National Recreation Area is along the Pacific Flyway and provides habitat for a great diversity of breeding, over-wintering, and migratory birds. Nineteen species of diurnal raptors have been detected in migration over the ridges of the Marin Headlands. Red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), and great horned owls (*Bubo virginianus*) nest in many of the large nonnative eucalyptus trees in the park. A wide range of other raptors and at least 10 owl species occur within the planning area. Numerous species of waterbirds also occur within the park in marine and rocky intertidal habitats, cliffs, beaches, and tidal and wetland areas (NPS 2005a).

Point Reyes Bird Observatory (now Point Reyes Bird Observatory Conservation Science) encountered 83 bird species during a 1997 breeding landbird censuses in coastal grassland, coastal scrub, riparian, and mixed hardwood habitats. From point count censuses in 1999 and 2000, white-crowned sparrows (*Zonotrichia leucophrys*), red-winged blackbirds (*Agelaius phoniceus*), savannah sparrows (*Passerculus sandwichensis*), and song sparrows (*Melospiza melodia*) were the most commonly detected species in grasslands. The most abundant species in coastal scrub were white-crowned sparrows, spotted towhees (*Pipilo maculatus*), and wrentits (*Chamaea fasciata*). In forested habitats, bushtits (*Psaltriparus minimus*), chestnut-backed chickadees (*Poecile rufescens*), dark-eyed juncos (*Junco hyemalis*), Pacific-slope flycatchers (*Empidonax difficilis*), and winter wrens (*Troglodytes troglodytes*) were commonly detected. Based on songbird nest monitoring in riparian habitats along Redwood and Lagunitas creeks, the song sparrow, Swainson's thrush (*Catharus ustulatus*), warbling vireo (*Vireo gilvus*), and Wilson's warbler (*Wilsonia pusilla*) were the most commonly observed nesters. The brown-headed cowbird (*Molothrus ater*) is a nest parasite that negatively affects the reproductive success of open-cup nesting songbirds and occurs throughout the planning area. Many of the landbirds in the planning area are Neotropical migrants, with others identified as species of management concern and riparian species of conservation priority by California Partners in Flight (NPS 2005a).

Alcatraz Island is a particularly important site for birds. A number of colonial waterbird

species inhabit Alcatraz Island. Waterbird species of interest include Brandt's cormorants (*Phalacrocorax penicillatus*), pelagic cormorants (*P. pelagicus*), western gulls (*Larus occidentalis*), pigeon Guillemots (*Cepphus columba*), black oystercatchers (*Haematopus bachmani*), black-crowned night herons (*Nycticorax nycticorax*), snowy egrets (*Egretta thula*), great egrets (*Casmerodius albus*), great blue herons (*Ardea herodias*), and California gulls (*Larus californicus*). The Brandt's cormorant colony on Alcatraz Island is one of the few known estuarine breeding sites for this species. Pigeon Guillemots breed nowhere else in San Francisco Bay, and the western gull and black-crowned night heron colonies are among the largest in the Bay (Acosta et al. 2008). None of the waterbird species on Alcatraz Island are special status species.

This diversity of species exists in a delicate balance with the considerable human presence both on and around Alcatraz Island. Colonial waterbird populations on the island experience substantial disturbance from a number of different sources. A large number of visitors tour the island annually, and associated historic preservation and safety construction projects, public access to breeding areas, gardening activities that are part of a historic garden restoration program, and special events could disrupt the breeding efforts of Alcatraz Island seabirds. Encroachment near the Alcatraz Island shoreline by large numbers of commercial or recreational boaters (e.g., tour boats, anglers, kayakers), and uncontrolled aircraft overflights (e.g., air tour operators), may have similar effects. In addition, dredging and other projects that disturb and alter the subtidal environment are potentially disruptive to seabird populations as these activities may remobilize contaminants, increase turbidity, and destroy essential foraging habitat (Acosta et al. 2008).

In 1993, Golden Gate National Recreation Area completed a management plan for Alcatraz Island, which included provisions for maintaining breeding populations of colonial waterbirds. This plan emphasized protection of the island's natural resources, while maintaining opportunities for visitor access, special events, and other island uses. The plan called for natural resource monitoring and the development of protocols to determine baseline information for key wildlife populations (Acosta et al. 2008).

Alcatraz Island, like other islands within park boundaries, provides important habitat for waterbirds. More specifically, Bird Island supports nesting seabirds, including Brandt's and pelagic cormorants, pigeon guillemots, and common murres (*Uria aalge*). Brandt's cormorant numbers on the island are variable, ranging from several hundred to zero nesting birds in recent years. Pelagic cormorants and pigeon guillemots nest in relatively low numbers. Common murres were first confirmed nesting on Bird Island in 2008, with several hundred birds breeding on the island over the next several years.

Devil's Slide Rock and adjacent mainland also provide important nesting habitat for waterbirds, including common murres, Brandt's and pelagic cormorants, pigeon guillemots, and western gulls. Common murres were attracted to reestablish a breeding population in 1996. Recent counts indicate from 421 to 862 common murres. Brandt's cormorant numbers range from over 500 nests to zero in recent years.

Lastly, small numbers of nesting western gulls exist on San Pedro Rock. Efforts were made to attract common murres to reestablish breeding populations, but these proved ineffective.

Amphibians and Reptiles. Small populations of the federal listed threatened California red-legged frog (*Rana aurora draytonii*) occur within the planning area.

Within San Mateo County, historic and current records indicate the presence of the federal listed endangered San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).

More common terrestrial amphibians in the planning area include ensatina (*Ensatina eschscholtzii*) and California slender salamander (*Batrachoseps attenuatus*). Common species spending a substantial amount of time at streams or ponds for breeding or rearing purposes include California newts (*Taricha torosa*), rough-skinned newts (*Taricha granulosa*), Pacific treefrog (*Hyla regilla*), and California giant salamander (*Dicamptodon ensatus*). Common reptiles include the Western fence lizard (*Scelopoms occidentalis*), northern alligator lizard (*Gerrhonotus coemleus*), Pacific gopher snake (*Pituophis melanoleusus*), and western terrestrial garter snake (*Thamnophis elegans*) (NPS 2005a).

Alcatraz Island has large populations of California slender salamanders, which are small lungless salamanders that do not require water for breeding. The northern end of the island has moist substrate that supports the salamanders. Neither the eggs nor the salamanders can tolerate salt spray, so they are limited to upland areas of the island (NPS 2001).

Fish. The planning area includes both resident and transitory fish species that occupy marine, estuarine, and freshwater habitats. Common, nearshore resident estuarine and marine fish include Pacific staghorn sculpin, arrow goby (*Clevelandia ios*), and topsmelt (*Atherinops affinis*). The brackish Rodeo Lagoon in the Marin Headlands supports a large population of the federal listed endangered tidewater goby (*Eucyclogobius newberryi*) (NPS 2005a).

Freshwater streams within the planning area are characterized by naturally limited species diversity. Perennial streams may include resident fish such as threespine stickleback (*Gasterosteus aculeatus*) and prickly sculpin (*Cottus asper*). Several important anadromous fish species are present in the creeks and watersheds within the planning area. Anadromous species are those that spawn or breed in streams and rivers and then migrate to and mature in the ocean. Anadromous species that breed and rear their young in streams within the planning area include endangered coho salmon (*Oncorhynchus kisutch*) and steelhead trout (*Oncorhynchus mykiss*). Coho salmon are listed as endangered and steelhead trout are listed as threatened under the Endangered Species Act. Intermittent streams or the intermittent headwater streams may support only steelhead trout (NPS 2005a).

Invertebrates. Two coastal grassland/scrub areas in the park are known for their high numbers and diversity of butterflies—Marin Headlands and Milagra Ridge. The federal listed endangered mission blue butterfly (*Icaricia icarioides missionensis*) occurs at both sites, while the San Bruno elfin butterfly (*Euphydryas editha bayensis*) is found at Milagra Ridge, where it inhabits rocky outcrops. At least 44 species of butterflies occur in the Marin Headlands and 34 species occur at Milagra Ridge, illustrating the importance of habitat fragments within largely developed landscapes. Various species of skippers, swallowtails, hairstreaks, blues, ladies, admirals, and crescents inhabit these areas. Monarch butterflies (*Danaus plexippus*) are found in clusters overwintering in many areas of the park, often in groves of nonnative trees. Other terrestrial invertebrates have not been well documented (NPS 2005a).

Limited information is available regarding the freshwater invertebrates that are present within the planning area. Targeted inventories have been conducted in streams such as Redwood Creek—223 freshwater species are known. The only federal listed species is the endangered California freshwater shrimp, which is found within the Lagunitas Creek watershed, an area managed by Point Reyes National Seashore. Limited information is also available regarding invertebrates from marine and estuarine habitats within the planning area—279 marine and estuarine species are known (NPS 2005a).

Alcatraz Island includes a small but significant site used briefly by Monarch butterflies in their fall migration. The butterflies are usually on the island for one to five days during this period and have been reported on vines on the east side of the island and near the chapel (NPS 2001).

Nonnative Wildlife. Many species of nonnative wildlife have been identified as problem species within the park. These species negatively affect populations of native animals through competition for resources, predation, and as vectors for disease. Nonnative terrestrial mammals include fallow deer (*Cervus dama*), feral hogs (*Sus scrofa*), red fox (*Vulpes vulpes*), opossum, house cats (*Felis domestiells*), and Norway and black rats (*Rattus norvegieus* and *R. rattus*). Nonnative birds found in the planning area include wild turkeys (*Meleagris gallopavo*), European starlings (*Sturnus vulgaris*), peasows (*Pavo eristatus*), house sparrows (*Passer domestieus*), and rock doves (*Columba livia*). Nonnative invertebrates present in the planning area include Argentine ant (*Iridomyrmex humilis*). Nonnative fish present within various human-made ponds include mosquitofish (*Gambusia affinis*) and various sunfish, while estuarine areas may support yellowfin goby (*Aeanthogobius flavimanus*). Nonnative amphibian and reptile species include bullfrog (*Rana catesbeiana*), red-eared slider (*Chrysemys pieta*), and the occasional caiman (NPS 2005a).

Norway rats have been observed on Alcatraz Island since 1998. These rats are a concern because of their potential as predators of waterbird eggs and chicks on the island. Norway rats have been known to reduce native rodent populations (NPS 2001).

Special Status Wildlife Species

Habitat for numerous rare or special status wildlife species (i.e., federal and state listed species, species of special concern, and candidate species) exists within the lands and waters of the park's legislative boundary. These special status species are permanent residents of the park, seasonal residents of the park, or rely on the land and waters of the park for migration. Twenty-seven wildlife species that occupy the land and waters of Golden Gate National Recreation Area are listed as threatened or endangered under the Endangered Species Act, as amended (16 USC 1536 [a] [2] 1982). Of these, 15 are federal endangered and 13 are federal threatened. It is important to note that three separate populations of the chinook salmon species and two populations of the steelhead trout species exist in the planning area. Since the federal status of the chinook salmon varies across populations (two are threatened, one is endangered), the sum of federal endangered and federal threatened species (28) does not directly coincide with the previously noted 27 protected species under the Endangered Species Act.

Fourteen of the wildlife species that occupy the lands and waters of the park are also listed as threatened or endangered by the California Endangered Species Act. Of these, 10 species are state endangered and 4 are state threatened. All but three of these state-listed wildlife species are also federal listed: the exceptions being the bald eagle, bank swallow, and California black rail.

Numerous other wildlife species (birds in particular) are considered sensitive by the Audubon Society, Partners in Flight, or the California Department of Forestry, or are designated Migratory Nongame Birds of Management Concern by the U.S. Fish and Wildlife Service. Nearly all of the native birds documented in the park are protected under the Migratory Bird Treaty Act (16 USC 528-531). Thirty-eight rare or special status plant species are currently identified within the park. Of those species, 9 are federal listed endangered, 1 is federal listed threatened, and 15 are included or proposed for inclusion by the California Native Plant Society (NPS 2005a).

The U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, provided a list of federal listed threatened and endangered species for consideration during development of the fire management plan in 2005. This list was used as the initial baseline of information for development of this general management plan because the planning areas for the two plans are identical (NPS 2005a). To refine and update the list of special status species in the planning area, the NPS Endangered Species Act Database, the California Department of Fish and Game's California Natural Diversity Database, and park staff data were referenced.

The table in appendix D identifies the threatened and endangered species that could occur in the planning area. Their current federal and state status and county-specific habitat location are also identified in the table. Appendix D also identifies which of these species have been retained for further analysis of impacts (also see the summary table of impact topics at the beginning of part 9 of this document, "Resources and Values that could be Affected by the Alternatives" [Affected Environment]).

To evaluate the effects on special status species, a set of species considered likely or possible to experience impacts from GMP actions was selected for assessment based on the presence of suitable habitat within the project area and discussions with NPS biologists.

Marin County

Mission Blue Butterfly – Federal Endangered

Mission blue butterflies (*icaricia icaroides missionensis*) are closely tied to the lupine larval host plants *Lupinus albifrons, L. variicolor*, and *L. formosIls*, with *L. albifrons* considered to be the preferred host. These host plants tend to occur in grasslands on thin, rocky soils within broader coastal scrub habitats. Lupine are susceptible to fungal outbreaks, which have been documented to cause rapid contractions of lupine distribution at the Marin Headlands. Competition from nonnative plants, including eucalyptus, Monterey pine, grasses, and broom, also threatens lupine host plants. Lupine is a fire-adapted species, and fire may enhance suitable lupine habitat for mission blue butterflies. Adults feed on nectar from numerous plants, although they may prefer wild buckwheat (*Erigonum latifolium*), golden aster (*Chrysopsis vilosa*), blue dicks (*Brodiaea pulchella*), and Ithuriel's spear (*Brodiaea laxa*). Habitat loss is probably the primary threat to mission blue butterflies, with trampling of host and nectar plants, larvae, and pupae also of concern. Other threats to mission blue butterflies at various stages of their life cycles include parasites, predators, and desiccation and disease during diapause (dormancy) (NPS 2005a).

Adults have one generation per year, with a flight period from mid-March to mid-May at Marin Headlands and late May to mid-June at San Bruno Mountain. Analyses suggest that warmer air temperatures are associated with higher numbers of adults at the seasonal peak and that rainfall is not related to the peak number of adults. Eggs are usually laid on the dorsal surface of larval host plants. Ants (*Prenolepis imparis* and *Formica lasioides*) may tend the later-instar mission blue larvae. Mission blue butterflies occur at Marin Headlands, Tennessee Valley, Milagra Ridge, and Sweeney Ridge within the planning area (NPS 2005a).

California Red-legged Frog – Federal Threatened

The California red-legged frog (*Rana aurora draytonii*) is found primarily in wetlands and streams in coastal drainages of central California. Red-legged frogs found north of the Marin-Sonoma county border exhibit intergrade characteristics of the California red-legged frog and the northern red-legged frog. The frog requires specific aquatic and

riparian features. Adults require a dense, shrubby or emergent riparian vegetation closely associated with deep (>2.3 feet) still or slow-moving water. The highest densities of California red-legged frogs have been associated with deep-water pools with dense stands of overhanging willows and an intermixed fringe of cattails. Breeding sites are up to 85 feet from water in dense riparian vegetation. Nonbreeding sites can be found up to 98 feet from water in adjacent dense riparian vegetation (Rathbun et al. 1993). A final rule designating critical habitat identified a small sliver near Sweeney Ridge, San Mateo (USFWS 2006). A recent court decision eliminated critical habitat within the planning area by changing the habitat definition. Critical habitat had been defined to include essential aquatic habitat, associated uplands, and dispersal habitat connecting essential aquatic habitat (NPS 2005a).

Tidewater Goby – Federal Endangered

The tidewater goby (*Eucyclogobius newberryi*) is a small benthic fish that occurs in the upper end of California coastal lagoons in salinities less than 10 parts per thousand. While generally found in coastal embayments, gobies are also known to occur in streams. In San Antonio Creek in Santa Barbara County, the goby is known to occur up to 5 miles upstream of the lagoon habitat. Within the planning area, tidewater goby is known only from Rodeo Lagoon in the Marin Headlands (NPS 2005a).

Chinook Salmon – Federal Threatened and Endangered; State Threatened and Endangered

Chinook salmon (*Oncorhynchu tshawytscha*) spawning and juvenile rearing habitat occurs in the Sacramento River and its tributaries and large streams and rivers connected to the Pacific Ocean. Chinook salmon have unique populations with distinguishable "runs" based on the timing of upstream migration and their spawning period. Winter-run chinook are listed as endangered (federal and state). Central Valley spring-run chinook are listed as threatened (federal and state). Adult and juvenile migratory corridors exist along the San Francisco Bay portion of Golden Gate National Recreation Area lands. Critical habitat for winter-run chinook includes San Francisco Bay to the Golden Gate Bridge.

Recent data indicate that most juvenile chinook salmon are using the Central Bay as a migratory corridor with most juvenile chinook moving along the northern corridor through Raccoon Strait and around Tiburon Peninsula, by Fort Baker, and out to the Golden Gate. Based on the occurrence of juvenile chinook at the Delta pumps and a one month transit time from Chipp's Island to the Golden Gate, winter-run chinook juveniles would be present near the Fort Baker area from January through June, while spring-run chinook juveniles would be present from March through June (MacFarlane 2002).

Coho Salmon – Federal Endangered and State Endangered

Coho salmon occur in several creeks within the planning area, as well as the nearshore waters of the Pacific Ocean and estuarine sites such as Bolinas Lagoon and San Francisco Bay. Coho salmon are found in Redwood Creek in Marin County. A single cohort of coho salmon was found in Easkoot Creek (Marin County). Coho are an anadromous species. They are born and reared in freshwater streams; as juveniles, they migrate to estuaries, adjust to saltwater, and then migrate to the ocean to mature into adults. Designated critical habitat for coho in Golden Gate National Recreation Area includes accessible estuarine and stream areas in the coastal watersheds of Marin County, except areas above longstanding naturally impassable barriers. Optimal habitat conditions for juvenile coho seem to be deep pools created by rootwads and boulders in heavily shaded stream sections (NPS 2005a).

Steelhead Trout – Federal Threatened

Steelhead trout occur in several creeks within the planning area. Steelhead are found in Redwood Creek in Marin County, as well as in the drainages to Bolinas Lagoon and Rodeo Lagoon. In San Mateo County, steelhead are found in West Union Creek, a tributary to San Francisquito Creek. Like coho, steelhead are an anadromous species. Adult steelhead enter Golden Gate National Recreation Area streams in late winter through spring to reach spawning sites, typically well-aerated areas with small- to medium-sized gravel. Habitat preferences for juvenile steelhead are deep pools created by rootwads and boulders in heavily shaded stream sections, although young-of-the-year steelhead are often forced into shallow-water habitats. The amount of time steelhead rear in freshwater and marine/estuarine habitats is variable, ranging between one to three years. For most drainages, surveys have been conducted for the presence or absence of salmonids, while in watersheds supporting coho salmon, abundance data on both species are available. The variable life cycle of steelhead makes population analysis more difficult, but also makes steelhead more resilient to adverse environmental conditions. In general, if the habitat requirements for coho were met, steelhead habitat requirements would also be met (NPS 2005a).

Designated critical habitat for steelhead in Golden Gate National Recreation Area includes the width of the stream channel defined by the ordinary high water line (U.S. Department of Commerce, NOAA 2005).

Northern Spotted Owl – Federal Threatened

Lands within Marin County support a northern spotted owl population of possibly 75 pairs. This population is isolated from spotted owl populations to the north by large areas of grassland and shrubs and constitutes the southern end of the subspecies range. Genetic analysis has shown low levels of genetic diversity within and low levels of gene flow between spotted owl populations in Marin County and Mendocino National Forest. The Marin County population supports the highest known density of northern spotted owls throughout their range. Threats to spotted owls in the planning area include urbanization, intense recreational pressure, disturbance from wildlife photographers and birders, genetic isolation, West Nile virus, possible catastrophic wildfire, expansion in the range of the barred owl (*Strix varia*), and habitat changes due to sudden oak death.

Spotted owls in Marin inhabit coniferous forest, including second-growth and remnant stands of Douglas-fir, bishop pine (*Pinus muricata*), coast redwood (*Sequoia sempervirens*), and mixed conifer-hardwood habitats composed of tanoak, coast live oak (*Quercus agrifolia*), and California bay (*Umbellularia californica*).

Spotted owls tend to nest in older stands of conifer and hardwood trees that create a tall overstory. Spotted owls often select larger trees with defects, such as broken tops or mistletoe (*Arceuthobium* spp.) infestations, for nesting, but also have been found nesting in young bay trees in smaller stands. Preliminary pellet analyses indicate that spotted owls forage primarily on dusky-footed woodrats (*Neotoma fuscipes*) in addition to other forest dwelling small mammals and songbirds. Within the planning area, known spotted owl locations are currently limited to Muir Woods and the Stinson Gulch area (NPS 2005a).

San Francisco County

Chinook Salmon – Federal Threatened and Endangered; State Threatened and Endangered

Chinook salmon spawning and juvenile rearing habitat occurs in the Sacramento River and tributaries and large streams and

rivers connected to the Pacific Ocean. Chinook salmon have unique populations with distinguishable "runs" based on the timing of upstream migration and spawning period. Winter-run chinook are listed as endangered. Central Valley spring-run chinook are listed as threatened. Adult and juvenile migratory corridors exist along the San Francisco Bay portion of Golden Gate National Recreation Area lands. Critical habitat for winter-run chinook includes San Francisco Bay to the Golden Gate Bridge. See a further description under Marin County. Chinook within the vicinity of Alcatraz Island are assumed to be present as migrating juveniles and adults. Research indicates that juvenile chinook salmon are using the Central Bay as a migratory corridor. The waters around Alcatraz Island have been designated as critical habitat for chinook salmon (NPS 2001).

Western Snowy Plover – Federal Threatened

The Pacific Coast breeding population of the western snowy plover is federal listed as threatened. On March 22, 2004, the U.S. Fish and Wildlife Service determined that substantial information existed to support the possible delisting of the species, and a status review was initiated. This population of snowy plovers occurs along coastal beaches; they nest primarily on sand spits, dune-backed beaches, beaches at creek and river mouths, and salt pans at lagoons and estuaries. Snowy plovers nest in coastal Marin County. The western snowy plover occurs within the park at Ocean Beach and Crissy Field from mid-July through early May. Snowy plovers have been observed on rare occasions and for short periods of time (over a few days) at Rodeo Beach and overwintering on Ocean Beach; they have been periodically sighted at other beaches. Snowy plovers breed primarily on coastal beaches from southern Washington to southern Baja California, Mexico (NPS 2005a).

Bank Swallow – State Threatened

Bank swallows (*Riparia riparia*) are colonial nesters, nesting primarily in riparian and other lowland habitats west of the desert. Bank swallows require vertical banks or cliffs near streams, rivers, lakes, or the ocean; they need fine-textured or sandy soils in which to dig nesting holes. Erosion by water and wind is important in creating and maintaining banks and bluffs suitable for nesting. Proximity to water is important at all seasons. During migration and in winter, wetlands provide a steady source of insects and a buffer against extreme temperatures. This species nests in the Fort Funston cliffs (NPS 2005a).

San Mateo County

Mission Blue Butterfly – Federal Endangered

See prior discussion under Marin County.

San Bruno Elfin Butterfly – Federal Endangered

The larval host plant for San Bruno elfin butterflies (*Callophrys mossii bayensis*) is *Sedum spathulifolium,* a succulent that grows on rocky, north-facing slopes along the coast (Lambert 2002). Adults are thought to stay within about 330 feet of host plants. Adults have one generation per year, with flight season from late February to early April. Eggs are laid on the ventral surface of the leaves of host plants. The fourth instar larvae pupate at the base of host plants where they remain through the summer, fall, and early winter. Habitat loss and trampling of host plants, larvae, and pupae are the primary threats to these butterflies. The San Bruno elfin butterfly is known to occur only at Milagra Ridge within the planning area (NPS 2005a).

San Francisco Garter Snake – Federal Endangered; State Endangered

The San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) is endemic to the San Francisco peninsula and is currently restricted to localities within San Mateo County. This listed species is primarily threatened by the loss and alteration of suitable wetland habitat due to urban development, freeway and road construction, illegal collection, agricultural practices, and trampling. It is considered semiaquatic and is found along the margins of ponds, lakes, streams, and estuaries (above tidal influx). It feeds on small amphibians and fish, especially the federal listed threatened California red-legged frog (*Rana aurora draytonii*). The planning area contains three sites (Sweeney Ridge, Milagra Ridge, Mori Point / Sharp Park) that appear to have suitable habitat for the San Francisco garter snake; however, no recent surveys specifically designed to locate the snake and assess habitat have been conducted. Only Mori Point / Sharp Park has had a documented occurrence of the San Francisco garter snake; however, no recent population data are available (NPS 2005a).

California Red-legged Frog – Federal Threatened

See prior discussion under Marin County.

Steelhead Trout – Federal Threatened

Adult and juvenile steelhead trout migratory corridors exist along the San Francisco Bay portion of Golden Gate National Recreation Area lands for two listed population segments (California Central Valley and California Central Coast).

Marbled Murrelet – Federal Threatened; State Endangered

The marbled murrelet (*Brachyramphus marmoratus*) nests in old-growth forests or on the ground at higher altitudes where trees cannot grow. The marbled murrelet has experienced a decline in numbers due to loss of nesting habitat. This member of the auk family feeds at sea in pelagic offshore areas and inshore in protected bays.

Special Status Plant Species

The lands and waters of the park provide natural conditions for several special status plant species (i.e., federal and state listed species, species of special concern, candidate species). Fourteen plant species that are present in Golden Gate National Recreation Area are listed as threatened or endangered under the Endangered Species Act as amended (16 USC 1536 [a] [2] 1982). Of these, 12 are federal endangered and 2 are federal threatened.

Eleven of the plant species that are present in the park planning area are also listed as threatened or endangered by the California Endangered Species Act. Of these species, nine are state endangered, and two are state threatened. All but one of these state listed plant species (San Francisco popcornflower) are also federal listed.

Other plant species in the park planning area are also of management concern to the park and are listed by the California Native Plant Society on List 4 – "Plants of Limited Distribution" (locally rare). Although these species are not actually listed as threatened or endangered under the federal Endangered Species Act, NPS *Management Policies 2006* states that the National Park Service will inventory, monitor, and manage state listed and locally listed species in a manner similar to its treatment of federal listed species. Management policies also state that the National Park Service will inventory other species that are of special management concern to parks such as locally rare, declining, sensitive, or unique species (NPS 2005a).

San Francisco Lessingia – Federal Endangered; State Endangered

The San Francisco *Lessingia* (*Lessingia germanorum*) is federal listed as endangered. It is found in open sandy soils and dunes in coastal scrub. San Francisco *Lessingia* has historically been endangered by competition with invasive nonnative vegetation and native scrub vegetation, development, sand quarrying, trampling and recreational activities, incidental use of fertilizers, and other activities (NPS 2005a).

NATURAL RESOURCES – MUIR WOODS NATIONAL MONUMENT

INTRODUCTION

Muir Woods National Monument is part of Golden Gate International Biosphere Reserve—one of the planet's richest and most threatened reservoirs of plant and animal life. Muir Woods National Monument occupies 558 acres of the Central California Coast Range in Marin County, California, only a few miles north of San Francisco.

Muir Woods National Monument preserves one of the last remaining ancient redwood forests on the Pacific Coast and in the world. The monument was established in 1908 to protect a unique old-growth redwood forest. Specifically, it was created in recognition of the "extraordinary scientific interest and importance because of the primeval character of the forest in which the monument is located, and the character, age, and size of the trees" (Proclamation No. 793, Jan. 9, 1908, 35 STAT. 2174). These protected redwoods are the "last contiguous stand of old-growth coastal redwood (*Sequoia sempervirens*) and Douglas-fir in Marin County." From its inception, the monument was designed to protect the primeval character of the redwood forests, and today, ecological integrity is a major driving force (Hall 2009).

The area surrounding Muir Woods National Monument is largely protected lands, including other units of Golden Gate National Recreation Area and lands managed by the state (Mount Tamalpais State Park) and by the Marin Municipal Water District. Muir Woods National Monument is entirely within the watershed of Redwood Creek. Originating on Mount Tamalpais (over 2,400 feet in elevation), Redwood Creek flows through the heart of Muir Woods National Monument, bisects Frank Valley, and discharges into the Pacific Ocean at Muir Beach.

In addition to preserving the California Coast Redwood, Muir Woods National Monument is home to several federal endangered and threatened species, including the northern spotted owl, coho salmon, and steelhead trout.

PHYSICAL RESOURCES

Air Quality

Muir Woods National Monument is within a class II air quality area and is in the San Francisco Bay air basin. There are no air quality monitoring stations at or near the monument. Therefore, no specific data are available. See the Golden Gate National Recreation Area section for a description of monitoring information for the general area.

Carbon Footprint

See description under Golden Gate National Recreation Area.

Soils and Geologic Resources and Processes

Muir Woods National Monument is subject to many of the same geologic processes described for Golden Gate National Recreation Area. Slopes are inherently unstable. Intense shearing associated with faulting along the plate margin has reduced the strength of the rock. Ongoing uplift of the mountains causes continued erosion as the landscape strives to become stable. Surface disturbances, such as cuts for trails and roads, vegetation clearing, and alteration of surface water drainages, can trigger or lead to slope failures (NPS 2005a).

Auwaerter and Sears (2006, p. 18–19) describe the California Coast Range as

> *a narrow band of low mountains along four hundred miles of coastline on the western edge of the North American tectonic plate… characterized by bedrock formed from ancient sea floor sediments and igneous rock that was heavily folded and uplifted due to lateral slipping along the juncture of the North American and Pacific plates*.

Within Muir Woods National Monument, elevations range from 120 feet to 1,340 feet above sea level. Redwood Creek loses approximately 50 feet in elevation from where it enters the monument on the north to where it exits approximately 0.5 mile downstream. Redwood Creek Canyon is the major topographical feature within the monument, and its hillslopes are steep, often exceeding 65%. These steep slopes provide considerable shade within the canyon. The monument extends a short distance into Kent Canyon on the northwest, and the newer additions on the southeast occupy a side canyon.

Soils

Based on the lands included within the monument in 1978, six soil complexes were identified within Muir Woods National Monument, which are distinguished by their soil type and slope. Howell et al. (no date) noted that the primary types are Centissima-Barnabe (derived from chert), basalt, and Franciscan formation sandstones. The Redwood Creek canyon floor is characterized as consisting of mostly "gray-podzolic soils" with clay-silt and clay-sand (Hall 2009).

Geology

Faulting and uplift in the Coast Range have left relatively unstable slopes subject to landslides and mass wasting. Valley bottoms have deep alluvial or colluvial fills. The mainstem alluvial valley fill in lower Frank Valley (about 4 miles downstream of the monument) is at least 37 feet deep, and may be locally as deep as 90 feet. Nearly half of the Redwood Creek watershed's hillslopes are landslide deposits. There are outcrops of rock dispersed throughout the watershed; in the headwaters, rocks have weathered to soils that can be very thin (<1 foot), although there are reports that soils in the upper Redwood Creek watershed can be as deep as 10 feet (Hall 2009).

Water Resources and Hydrologic Processes

Surface Water

The Redwood Creek watershed extends from Mount Tamalpais to Muir Beach. Redwood Creek is the dominant hydrologic feature within Muir Woods National Monument. The Redwood Creek watershed encompasses approximately 8.9 square miles (including Green Gulch Creek, which flows into Big Lagoon). Above the monument, the precipitous headwater tributaries of Redwood Creek (Fern, Spike Buck, and Rattlesnake) descend the steep south slope of Mount Tamalpais with many waterfalls. These upper tributaries flow through deep, steep canyons, with step-pool channel morphology. Redwood Creek, which is formed by the confluence of Bootjack and Rattlesnake creeks, flows through the heart of the monument for approximately 0.5 mile, being fed by several intermittent streams. Fern Creek, which originates on Mount Tamalpais, flows into Redwood Creek just within the northern boundary of the monument. Once Redwood Creek enters the monument, the channel flattens considerably, to less than a 2% grade, with a bed composed of mixed gravel and cobble. During the 1930s, Redwood Creek within the monument was lined with rock revetments, and check dams were installed to channelize the creek and protect the old-growth redwoods. Since that time, the check dams have been removed and the creek is being returned to a more natural

state. Consequently, the section of Redwood Creek that flows through the monument has more riffles and fewer deep water pools than would occur in a highly natural creek with a similar slope (Hall 2009).

Below the monument, Redwood Creek is joined by Kent Canyon Creek as it flows through Frank Valley and becomes a relatively broad alluvial floodplain. This stretch has experienced considerable impact from agriculture and pasturing and is incised and isolated from its floodplain. Below Frank Valley, the creek enters the ocean at Muir Beach through a 2.2-acre intermittent tidal lagoon, typically referred to as Big Lagoon, which is also fed by Green Gulch Creek. During winter and spring the lagoon experiences tidal influences. As streamflow declines in late spring or summer, the beach berm builds up across the mouth of the creek, blocking surface flow from Redwood Creek to the Pacific Ocean and tidal exchange between the lagoon and Pacific Ocean. Lower Redwood Creek in the Muir Beach area has been altered through water diversions, agricultural levees, the construction of an NPS parking lot, and streambank alterations. One outcome of this cumulative change has been substantial aggradation of the channel (Hall 2009).

Groundwater and Municipal Water Use

Although most of the Redwood Creek watershed is managed as state and federal park lands, it also provides water for local firefighting, residential, and agricultural uses. Marin Municipal Water District stores water from springs in the upper watershed (upstream of the monument) for firefighting. Downstream of the monument, the Muir Beach Community Services District supplies the Muir Beach Community with water from a well near the creek, and Green Gulch Farm impounds and diverts flow in the Green Gulch subwatershed. Diversions in Big Lagoon have been abandoned, though the water right remains in place (Hall 2009).

Floodplains

Within Muir Woods National Monument, 100-year floodplains are along Redwood Creek. As a result of natural weather events and the topography and soil characteristics of the area, runoff in the Redwood Creek watershed is high in the winter, with occasional flash floods. Two-year flood magnitudes are estimated at approximately 800 cubic feet per second (cfs), while the 50-year flood magnitude estimate is just over 4,000 cfs. However, during summer, flows are much lower—often below 1 cfs at the State Route 1 bridge—and many tributary streams are intermittent (NPS 2005b).

Water Quality

Water quality monitoring has been conducted at various times and with differing intensity within Redwood Creek and its tributaries. Monitoring has mostly been conducted outside of the monument because most inputs are from agricultural uses and other sources outside the monument. In 2005, Stillwater Sciences designed a water quality monitoring protocol for the watershed that can be used to isolate general areas of contaminant sources. This protocol was implemented once in 2005 as a baseline and may be implemented in future years depending on the availability of funding. A review of a history of water quality sampling in the watershed is compiled in the Existing Conditions Report for the Big Lagoon Wetland and Creek Restoration (Philip Williams and Associates 2003). Don Weeks (2006) issued the Water Resources Foundation Report, a background document on water resources that also identifies relevant laws and policies. Lendvay and Benning (2004) collected baseline water quality data, including pH, alkalinity, metals and ions, temperature, dissolved oxygen, nutrients, and turbidity, at five locations throughout the watershed. Their extensive study compares findings to an earlier, similar study by Madej (1989). In 2008, the Regional Water Quality Control Board established monitoring sites along the length of Redwood

Creek as part of their Surface Water Ambient Monitoring Program that is focusing on benthic macroinvertebrates, periphyton, nutrients, and basic water quality parameters (Hall 2009).

Field surveys and aerial photograph analysis have been conducted to identify and quantify current and potential future sediment supply from roads, trails, culvert stream crossings, and (to some extent) bank erosion in the Redwood Creek watershed. Sediment sources were assessed for 27 miles of roads and 40 miles of trails, leading to recommendations for erosion control priorities to protect fish and other aquatic species within the watershed. These results were incorporated into a more comprehensive watershed sediment budget developed for the Lower Redwood Creek Restoration Project (Hall 2009).

Madej (1989) summarized water quality monitoring that was performed between 1986 and 1989 in the lower Redwood Creek watershed (below the monument). Most metals were not detected, although there was one unusually high reading for copper (80 μg/L). Later reports attribute this to pesticide use, although this appears to be speculation (NPS 1991). Park staff report that this may have been related to the use of copper hoof treatment used at the stables, a practice that has been discontinued. Levels of coliform bacteria and nitrogen were high, evidently due to horse pastures and agricultural activities at Green Gulch Farm, as well as septic leach. Phillip Williams and Associates (1995) reported the lowest levels of nutrients and bacteria in the headwaters of Redwood Creek and the highest downstream of the monument; the number of organisms per 100 ml was 50 upstream of Banducci, 300 below Banducci, and 1,900 at Pacific Way. Stillwater Sciences (2005) also report that NPS testing during the 1990s at Muir Woods National Monument found fecal coliform levels within the monument to be within California state thresholds (Hall 2009).

Several studies have found that temperatures in Redwood Creek are within the tolerances of salmonids. Lendvay and Benning (2004) reported temperatures across their sample locations to range from 10.8°C to 11.0°C in early March and from 14°C to 16°C in late April. They concluded that temperatures during spawning season should be cool enough for coho. Their study, conducted from March through April, found dissolved oxygen levels to be adequate for insects and salmon. However, others have found dissolved oxygen levels to be reduced in Big Lagoon in the summer, and this is considered a key factor limiting juvenile fish survival (Hall 2009).

Lendvay and Benning (2004) determined that most water quality parameters were within EPA standards for aquatic life. Here pH ranged from 7.3 at Muir Beach to 8.0 at Bootjack Creek. Nitrate, though variable, was far below the standard of 90.0 mg/L, suggesting little concern about eutrophication. Somewhat high ammonia readings at specific sites on specific dates might suggest some concern, but the authors said that typical levels were well below the threshold for salmonids in most parts of the watershed. Sulfate levels were extremely low. This study found low levels of copper, in contrast to the levels reported by Madej (1989). Turbidity levels were high on sampling dates following storms, but quickly fell to levels within EPA standards. The low turbidity found in the Redwood Creek watershed suggests conditions suitable for salmonids, aquatic vegetation, and benthic macroinvertebrate populations (Hall 2009).

Other parameters reported by Lendvay and Benning (2004) were out of compliance with EPA standards. Alkalinity measures exceeded the EPA minimum standard for freshwater aquatic habitat of 20.0 mg/L (even the lowest reading, 42.8 at Fern Creek, was significantly above the standard). Phosphate readings, though highly variable, exceeded the guideline of 0.1 mg/L at every site. Aluminum concentrations exceeded the recommended limit for fish at all sites on one date and at two

sites on other dates, and the authors concluded that "aluminum may be a threat to aquatic species in Redwood Creek." Similarly, zinc concentrations were frequently above the EPA limit for freshwater ecosystems, indicating possible negative effects (Hall 2009).

Overall, Lendvay and Benning (2004) conclude that the water quality of Redwood Creek is excellent. Despite the fact that some parameters were elevated, in the context of other parameters, such as very healthy benthic macroinvertebrates, these do not seem to be posing significant threats (Hall 2009).

BIOLOGICAL RESOURCES

The majority of Muir Woods National Monument (approximately 80%) is occupied by old-growth coastal redwood / Douglas-fir forests in uneven aged stands (NPS 2005b). Although it is difficult to age old-growth redwoods, individual trees on alluvial flats in the monument are estimated to be as much as 1,000 years old.

Muir Woods National Monument is in the center of the California Floristic Province, one of only five regions in the world with a Mediterranean climate. At the landscape scale, plant associations are shaped by aspect, marine influence, and elevation (NPS 2005a). Generally, within the San Francisco Area Network, the three provinces represented are the California Coastal Chaparral Forest and Shrub; the California Dry Steppe; and the California Coastal Steppe, Mixed Forest and Redwood Forest. The redwood forests of Muir Woods National Monument fall within the last of these, while around the edges of the monument are small patches of other plant communities that are much more common in parts of Mount Tamalpais and the Marin Headlands (NPS 2005a). To the southwest is coastal scrub dominated by coyote brush, grasses and forbs; and to the northeast is a mosaic of coast live oak, California bay, and chaparral. At the south end of the monument, the Redwood Creek riparian area loses the redwoods and becomes dominated by deciduous trees like red alder and broadleaf evergreen trees such as California bay and tanoak (Hall 2009).

The monument provides important habitat for federal listed threatened or endangered species, namely northern spotted owls, coho salmon and steelhead, and several species of bats that are listed as sensitive species. All of these species breed within the monument. Redwood Creek has been identified as "a high priority restoration area for coho salmon" under the California Department of Fish and Game's 2004 Recovery Strategy. While suitable marbled murrelet habitat has been identified in the monument, there has been no confirmation that this species uses the park for breeding (Hall 2009).

Habitat (vegetation and wildlife)

Plant Communities

Muir Woods National Monument is the most intact old-growth coastal redwood forest in the Bay Area. It is estimated that nearly 2 million acres of forest similar to those in Muir Woods National Monument once covered a narrow strip along the coasts of California and Oregon. Today, 97% of this forest area has been displaced or degraded and most coastal redwoods now grow in protected second- and third-growth forests or managed timber plantations. Muir Woods National Monument remains a very accessible yet prime example of an old-growth forest.

Sudden oak death is a common name given a pathogen (*Phytophthora ramorum*) responsible for widespread tree death throughout northern and central California. This pathogen first appeared in Muir Woods National Monument during the mid-1990s, and although many plants in the redwood forest are affected, the tanoaks have suffered the most.

"NPSpecies," a National Park Service database, documents 263 vascular plant species present in the monument. Approximately 29 other species are probably present, but have not been verified, and 17 species are unconfirmed. Forty-four species are listed as historic, meaning they were previously present but are believed to be extirpated. The basis for this determination is staff knowledge of the site, although no field inventory of plants has yet been completed. A 1966 lichen inventory identified seven fruticose lichens, nine foliose lichens, and several unidentified species of crustose lichens (Hall 2009).

There do not appear to be many native plant species of concern in the monument. The 1980 general management plan (NPS 1980) identified the San Francisco wallflower (*Erysimum franciscanum* var. *franciscanum*) and Presidio clarkia (*Clarkia franciscana*) as being species of special status, but no further mention is made of these in subsequent planning documents, and they are not mentioned in current lists of species of management concern. They have never been documented within the monument and evidently their inclusion on the list and in the 1980 plan was an error. Oakland star tulip or mariposa lily (*Calochortus umbellatus*) is described in the fire management plan (NPS 2005a) as a California Native Plant Society listed species, which has been found "in the vicinity of Muir Woods" in grasslands. Additionally, the California bottle-brush grass (*Elymus californicus*) is a federal species of concern; this species prefers coniferous forests and riparian woodlands and has been documented in the monument (NPS 2005a). The only active management for rare plant species within the monument has been some fencing along the valley floor to protect California bottle-brush grass, which appears to have been effective (Hall 2009).

Coast Redwood / Douglas-fir Forests. As noted earlier, most of the monument is composed of mixed age coast redwood and Douglas-fir (NPS 2005a). In the monument, the redwood forest "extends along the canyon floor north beyond the monument, across most of the northeastern-facing canyon wall up to the Dipsea Trail, and along portions of the lower southwest-facing wall and adjoining side canyons extending to Ocean View Trail. In these areas, the redwoods thrive in a cool microclimate with loamy soils and ample moisture from fog, rain, and groundwater" (Hall 2009).

Although this forest is largely isolated within the larger landscape due to natural conditions such as physiography and the restricted environmental requirements of redwoods, as well as logging and conversion of lands in the surrounding area, the tracts of forest within the monument have had a serendipitous history of protection that has preserved many of the structural and functional ecological features. The monument's redwood forests were never logged (McBride and Jacobs 1978), although logging did occur in Conlon Canyon. While it is true that substantial impacts were historically imposed by recreation and tourism (e.g., trampling, campfires, and collecting plants) and park management (e.g., stream alteration, removal of woody debris), it is possible to recover from some of these impacts within a period of years or decades. Indeed, studies have shown that areas formerly devoid of vegetation along Redwood Creek have recovered to the point that it is not possible to discern restoration plantings from natural vegetation. On the steep hillsides away from Redwood Creek, it appears that impacts on ecosystems were even more limited. Stillwater Sciences (2005) noted that "understory cover today is probably the most extensive that it has been in a century." National Park Service staff considers the health of the redwood forest to be good. Public ownership of surrounding lands is an aspect that helps maintain certain ecosystem functions within the monument's redwood forests.

Other Terrestrial Vegetation Types. Outside the redwood and Douglas-fir forests, there are small patches of other vegetation types in the monument that are much more

extensive in other parts of the watershed outside the monument. McBride and Jacobs (1978) described five vegetation types: hardwoods, brush, grassland/brush, hardwood/brush, and grassland. These include the habitat types identified in the fire management plan (NPS 2005b) as native hardwood, coastal scrub/chaparral, grassland, nonnative evergreen, and developed. While the redwood forests are largely intact or recovering, these other habitat types have been more extensively altered (Hall 2009).

The native hardwood forest (or mixed hardwoods) covers 800 acres of the Redwood Creek watershed (Stillwater Sciences 2005), of which only 59 are within Muir Woods National Monument. These forests have not been well studied. In places like the Monte Vista tract in the Camino del Canyon and Camp Hillwood areas, where development and residential uses have occurred, the hardwood forests have been substantially reduced in extent. Presumably, under NPS management, these areas will begin to return to a more natural state, although there are concerns about invasive species such as eucalyptus, which can dramatically alter forest structure and composition. In areas along Camino del Canyon, various landscape plants have escaped, and invasive nonnatives such as yellow starthistle (*Cenaurea solstitialis*) and French broom (*Genista monspessulana*) are problems. Additionally, the native hardwoods are at great risk from sudden oak death (Hall 2009).

The remaining native vegetation types—coastal scrub/chaparral and grassland—have been highly altered due to a combination of fire suppression, land use practices, and invasion by nonnative species (Stillwater Sciences 2005; NPS 2005b). The coastal scrub/chaparral occurs at upper elevations and seems to be invading grasslands as a result of fire suppression (NPS 2005a). In turn, coniferous forests are invading the lower elevations of the scrublands. Within the Redwood Creek watershed, most native grasslands, which occupy ridgetops and slopes, have become dominated by nonnative, Mediterranean annual grasses (Stillwater Sciences 2005).

Invasive Plants. Invasive nonnative plants are a considerable problem within all other habitat types. In fact, approximately one-third of the plants (108 species) identified within the monument are nonnatives, many of which are landscape plants found in the Monte Vista additions.

Within the redwood forests, McBride and Jacobs (1978) identified three nonnative forbs, but considered them to be rare and not a threat. There are isolated patches of nonnative aquatic plants, but these seem to be limited in extent and are relatively stable. Today, there are two main nonnative species of concern in the riparian redwoods: the forget-me-not (*Myosotis sylvatica and Myosotis latifolia*) and panic veldtgrass (*Ehrharta erecta*). Originally introduced to improve the aesthetics of the forest, forget-me-nots quickly spread throughout the monument. Fortunately, diligent work by park staff and volunteers has kept this species in check along the canyon floor, although there is concern about the ability to eliminate it from steep, inaccessible slopes. Along Redwood Creek, removal of this species has led to an increase in native plant cover. Outside the riparian forests, the park has worked to eliminate other invasive species, including cape ivy, brooms (*Genista monspessulana, Cytisus scoparius, Spartinum junceum*), acacia (*Acacia melanoxylon, Acacia decurrens*), and other species (Hall 2009).

Aquatic Systems

The major ecosystem elements within the monument that have been altered include the aquatic and riparian systems. For decades, concerted efforts were made to "clean up" the Redwood Creek valley to alleviate problems with flooding and provide an aesthetically pleasing visitor experience. This amounted to removing woody debris from the forests and engineering the creek to create a more consistent gradient and protect

its banks from erosion. Most of this was a result of intensive Civilian Conservation Corps (CCC) work during the 1930s, when Redwood Creek within the monument was leveled and rock revetment was installed (Auwaerter and Sears 2006; Stillwater Sciences 2005). The revetment occupies 57% of the total streambank length (3,541 feet) within Muir Woods National Monument. As late as the early 1990s, woody material was being removed from the stream to prevent log jams that might increase flooding. Channelization has decreased flooding and, consequently, deposition. It has also drastically altered instream morphology, reducing the number and depth of pools and eliminating undercut banks (Fong 2002). Fong's survey showed that pools occupied only 32% of that portion of Redwood Creek within the monument, with flat water or shallow riffles being much more extensive. In summer, some riffles become so shallow that fish are forced downstream. A survey in 2003 showed a lower biomass of salmonids was associated with the presence of riprap. The channel immediately downstream of the monument's boundary, where riprap was never installed, appears more natural than the area within the monument. However, Redwood Creek within the monument has the least amount of fine substrate and more riffles, and therefore, the largest number of spawning areas (Hall 2009).

Other impacts on Redwood Creek, both upstream and downstream of Muir Woods National Monument, have impacted ecosystem functions. Sedimentation from upstream associated with roads and culverts have impacted the entire length of the creek. However, sedimentation from roads and culverts is not the major player in channel habitat downstream of the monument. The watershed sediment budget identified and quantified sediment sources to Redwood Creek for three historical periods and included future projections. In the recent past, channel incision was the largest source of sediment to the creek downstream of the monument (57% of total supply from 1921 to 1980). As channel incision slows or ceases, erosion from roads and trails is expected to contribute 23% to total sediment yield in the lower creek. In addition to roads and trails, future sediment sources include hillslope erosion (19%), tributary bank erosion (29%), and channel incision (28%). Additionally, changes at Lower Redwood Creek at Muir Beach appear to have had a considerable impact on habitat characteristics necessary for salmon, steelhead, and red-legged frogs. Nevertheless, despite its degraded condition, Lower Redwood Creek appears to be a major holding area for run-back steelhead adults, and its important ecological role has led to it being a high priority for restoration (NPS 1999b; NPS and Marin County 2007; Hall 2009).

Philip Williams and Associates (1995) characterized the Redwood Creek watershed as a whole as

> *unique among California coastal watersheds of its size in that it remains largely undeveloped and is protected as state and federal park lands. The creek has largely recovered from historical grazing activities in the watershed, and now supports sustainable populations of coho salmon.*

Thus, there clearly have been alterations to cover and habitat that have influenced ecological functioning. However, within the larger landscape, the Redwood Creek watershed is a primary target for restoration and maintenance of important habitats. The facts that there are no impoundments, except in the Green Gulch subwatershed (Martin 2000; Philip Williams and Associates 2003) that would severely fragment habitat, and most watershed land is in local, state, or federal government ownership, create opportune conditions for protection (Hall 2009).

Wildlife

Within the Redwood Creek watershed, riparian woodlands provide breeding habitat and forage for 85 bird species and 16 mammal species. Two mammals (the shrew-mole and the broad-footed mole) were found only in this habitat. Nineteen of the bird species and one mammal are species of management concern. Cape ivy—which is present in the Monte Vista tract but not yet in the redwoods—has had documented impacts on the diversity of bird species (Hall 2009).

Redwood/Douglas-fir forest in the Redwood Creek watershed provide habitat for 30 bird species and 20 mammals. Hall observed that "this habitat supports an average-to-high bird diversity and low bird abundance compared to other habitat types in the watershed." Mammals that are preferentially associated with these forests include deer mouse (*Peromyscus maniculatus*), gray fox (*Urocyon cinereoargenteus*), opossum, trowbridge shrew (*Sorex trowbridgii*), Sonoma chipmunk (*Tamias sonomae*), western gray squirrel (*Sciurus griseus*), and raccoon (*Procyon lotor*) (Howell et al. n.d.); 17 species of concern (4 bats and 13 birds) have been detected in this habitat type (Hall 2009).

Mammals

According to NPSpecies, 27 mammal species are confirmed present in Muir Woods National Monument, while 9 are unconfirmed. Domestic and feral cats, local dogs, and turkeys are presently considered pests. None of the mammals is considered at risk of exploitation. Howell et al. (n.d.), in a mammal survey, documented black-tailed deer (*Odocoileus hemionus*), meadow vole (*Microtus pennsylvanicus*), and opossum, which do not appear in the NPSpecies list. Additionally, they documented domestic dogs ("unconfirmed" in NPSpecies) and western spotted skunk (*Spilogale gracilis*) ("false report" in NPSpecies). NPSpecies lists no "historic" (extirpated) species, but various historic documents suggest that several large mammals, such as bears, were historically present but disappeared as long ago as the late 1800s. The NPSpecies data provide no information on nativity, abundance, or residency for mammals in the monument (Hall 2009).

Among the mammal species, bats have received significant investigation. Habitat for bats in Muir Woods National Monument is considered of high quality, and the diversity of species is notable—Heady and Frick (2004) reported 10 species foraging and/or roosting in the monument; this number represents 69% of the species that are likely to occur in the region. Redwoods are particularly good habitat because they provide hollows and crevices for roosting. The Townsend's big-eared bat (also called the Pacific western big-eared bat) occupies humid coastal regions of California, roosting in caves, mines, buildings, and fire scars (NPS 2005a). It is very sensitive to disturbance and suffers from a lack of suitable roosting sites; because of their large cavities, large diameter redwoods offer some of the only suitable habitat. The fringed myotis occurs in a wide variety of habitats, although it prefers foothill hardwoods and hardwood-conifer forests and has been considered preferentially associated with redwood forests. The long-legged myotis is most common above 4,000 feet in elevation in primarily coniferous forest habitats. It uses trees as day roosts and creates nursery colonies in hollow trees. This has led to increased protection of fire scars. The Yuma myotis prefers open woodlands and forests, and requires still water sources that attract prey insects. It is tolerant of human habitation. Little is known about the western red bat (U.S. Forest Service sensitive species), although it is known to roost in cottonwoods and willows and is thought to be migratory (Hall 2009).

Birds

Over 50 species of birds have been identified in Muir Woods National Monument during a one-year period. Their abundance and periods of song vary with time of day, season, and weather conditions. A deep, wooded

redwood canyon is a specialized habitat. Although this old-growth forest supports northern spotted owls and pileated woodpeckers (*Dryocopus pileatus*), the overall lack of food is the primary reason for the apparent scarcity of birds. There are few insects in a redwood forest, as the tannin repels insects and the deep shade limits the number of flowers and fruits produced.

In addition, federal threatened northern spotted owls nest in coniferous and mixed-hardwood forests surrounding Muir Woods National Monument. The monument also contains potential marbled murrelet habitat, but no breeding murrelets have been detected in two years of surveys.
The following quotation from the superintendent's annual report for 1923 indicates little change during the past 80 years in the bird life found in Muir Woods:

> *Birds, as is generally the case in a redwood forest, are conspicuous by their absence—Steller's jays being the only bird seen in any numbers.*

Fifty-nine bird species are confirmed present in the monument, according to NPSpecies, although the 1999 resource management plan indicated that "at least 69 bird species occupy Muir Woods" (NPS 1999b). Seven are migratory species and 23 are known to breed within the monument. The only federal listed threatened species is the northern spotted owl, which breeds in and near the monument. Although Muir Woods National Monument appears to provide habitat suitable for marbled murrelets, which nest only in redwood trees, none have been detected despite a focused inventory. Appendix D, which provides detailed information about all special status species, lists two state species of concern in Muir Woods National Monument: Cooper's hawk (*Accipiter cooperi*) and sharp-shinned hawk (*A. striatus*). Inventories in 2000 did not detect either hawk species. However, Allen's hummingbird (*Selasphorus sasin*) and hermit thrush (*Catharus guttatus*)—both species of management concern—were observed, as well as the chestnut-backed chickadee (*Parus rufescens*), which is on the Audubon watch list. According to their point count data, the Pacific-slope flycatcher (*Empidonax difficilis*), a species of management concern, was the most common bird; it was observed at 93% of the census points. The other most common species were winter wrens (65%), chestnut-backed chickadees (56%), golden-crowned kinglets (54%), brown creepers (47%), and dark-eyed juncos (30%) (Hall 2009).

Amphibians and Reptiles

NPSpecies lists five amphibians as present within the monument, along with two species that were documented historically, but are no longer present—the foothill yellow-legged frog and yellow-eyed ensatina (*Ensatina eschscholtzii xanthoptica*). Yellow-legged frogs were collected in 1954, but they were not found in 1993 within the monument, and Hall noted that this species is "now very rare or absent" in areas where it formerly was abundant. Very little information is available about the abundance or status of many of these amphibian species (Hall 2009).

The nonnative signal crayfish has long been established in Redwood Creek and Fern Creek. It is the only nonnative aquatic species in the monument. It is possible that this species displaced the native sooty crayfish (*Pacifastacus nigrescens*) (Hall 2009).

The California giant salamander is found from Sonoma County to Santa Cruz County, particularly in humid coastal conifer forests. A recent survey found that salamander larvae were rare in the main stem of Redwood Creek, but more abundant in tributaries. Fong and Howell noted that the signal crayfish and giant salamander were rarely found together in any stream habitat type, but they were unable to determine whether the crayfish were displacing the salamanders from preferred habitats. They noted that, because crayfish tend to favor pools, actions that might be taken to restore stream features such as pools could increase the abundance of crayfish (Hall 2009).

NPSpecies lists 12 reptile species as present within Muir Woods National Monument. The abundance, residency, and nativity of most of these species are unknown. Very little is reported about any of these species in any planning or research reports. However, the Pacific (western) pond turtle (*marmorata,* formerly *Clemmys marmorata*), a federal species of concern, is listed as present in the monument, although none of the recent aquatic habitat assessments make mention of it (Hall 2009).

Fish

An old-growth forest is very interconnected; through time, many of the plants and animals become reliant on one another. One example at Muir Woods National Monument is found in Redwood Creek. The redwoods depend on the creek for most of their water and the trees help keep the gravel in the creek clean by stabilizing the soil. The trees also help keep the temperature of the stream cool and constant. As the trees die and fall into the creek, they create pools and enrich the stream with their nutrients. Because salmon need clean gravel, constant water temperature, and pools for spawning, Redwood Creek provides good habitat for salmon. It is one of the last streams in California to have its native stock of salmon, due largely to the undisturbed forest surrounding it. Both coho salmon and steelhead trout are found in Redwood Creek.

There are four native fish species present in the monument, although additional species, including some nonnative fish, occupy lower reaches of Redwood Creek. The two most significant species—targets of extensive monitoring—are coho salmon (recently upgraded federally to endangered status) and steelhead (federal listed as threatened). Redwood Creek is critical habitat for both; Muir Woods National Monument provides good spawning habitat but, due to loss of pools and structure, juvenile rearing habitat is very limited. Both runs have been considered stable, although substantially reduced from historic times (Hall 2009).

The Redwood Creek coho are part of the Central California Evolutionarily Significant Unit, found in three watersheds in the NPS San Francisco Bay Area Network (NPS 1999a). However, genetic analysis shows that the coho in Redwood Creek are a genetically distinct subgroup that is not closely related to other coho in the same evolutionarily significant unit (NPS and Marin County 2007). Spawning occurs between December and February, depending on when storm flows increase enough to permit returning adults to breach the sandbar at Big Lagoon. Emergence occurs in March and April, and the juveniles remain in fresh water for approximately 15 months before heading to the ocean for 16 months. This cycle creates three "year classes" of fish; for instance, the fish returning to spawn in 2007 and 2008 were from the 2004/2005 year class. Given their lifecycle, habitat requirements vary; fish need habitat for spawning, juvenile rearing and migration, growth to adulthood, and adults need migration corridors (NPS and Marin County 2007). Juvenile rearing habitat with refugia and shelter appears to be especially limiting in Redwood Creek. Big Lagoon's altered environment does not provide high-quality salmonid-rearing habitat (Hall 2009).

Nonnative Wildlife

A few nonnative mammals have been of concern to the monument. In the past, feral hogs were widespread in Golden Gate National Recreation Area (including Muir Woods National Monument), but they have been largely controlled (NPS 1999b). They can seriously degrade habitat, disturb soils, compete for food, and transmit diseases. Feral cats and domestic dogs (unconfirmed), though not major concerns, can present problems for native wildlife (Hall 2009).

There have been anecdotal reports of chukars (*Alectoris chukar*), a nonnative species, near but not yet within the monument. Also, wild turkeys are considered nonnative and increasing in and around Muir Woods National Monument. This species

was introduced by California Department of Fish and Game for hunting, but Golden Gate National Recreation Area considers it invasive and uncontrolled. It competes with native species for food and has been known to harass people. NPS staff are contemplating small pilot removals (Hall 2009).

Special Status Species

Coho Salmon – Federal Endangered; State Endangered

Coho salmon occur in several creeks within the planning area, as well as the nearshore waters of the Pacific Ocean and estuarine sites such as Bolinas Lagoon and San Francisco Bay. Coho salmon are found in Redwood Creek in Muir Woods National Monument. A single cohort of coho salmon was found in Easkoot Creek (Marin County). Coho are an anadromous species; born and reared in freshwater streams, as juveniles they migrate to estuaries, adjust to saltwater, and then migrate to the ocean to mature into adults. Designated critical habitat for coho in Golden Gate National Recreation Area includes accessible estuarine and stream areas in the coastal watersheds of Marin County except areas above longstanding naturally impassable barriers. Optimal habitat conditions for juvenile coho seem to be deep pools created by rootwads and boulders in heavily shaded stream sections (NPS 2005a).

See previous discussion under Golden Gate National Recreation Area.

Steelhead Trout – Federal Threatened

Steelhead are found in Redwood Creek, which flows through Muir Woods National Monument, as well as the nearshore waters of the Pacific Ocean and estuarine sites such as Bolinas Lagoon and San Francisco Bay. Like coho, steelhead are an anadromous species. Adult steelhead enter Golden Gate National Recreation Area streams in the late winter through spring to reach spawning sites, typically well-aerated areas with small- to medium-size gravel. Habitat preferences for juvenile steelhead are deep pools created by rootwads and boulders in heavily shaded stream sections, although young-of-the-year steelhead are often forced into shallow-water habitats. The amount of time steelhead rear in freshwater and marine/estuarine habitats is variable, ranging between one and three years. For most drainages, presence/absence salmonid surveys have been conducted, while in watersheds supporting coho salmon, abundance data on both species are available. The variable life cycle of steelhead makes population analysis more difficult, but also makes steelhead more resilient to adverse environmental conditions. In general, if the habitat requirements for coho were met, steelhead habitat requirements would also be met (NPS 2005a).

In April 2002, the U.S. District Court for the District of Columbia approved a National Marine Fisheries Service consent decree withdrawing a February 2000 critical habitat designation for steelhead trout. Designated critical habitat for coho includes all accessible estuarine and stream areas in the coastal watersheds of Marin County except areas above longstanding, naturally impassable barriers. Through this designation, NOAA-Marine Fisheries Service identified 10 essential features of critical habitat: substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions (NPS 2005a).

See previous discussion under Golden Gate National Recreation Area.

Northern Spotted Owl – Federal Threatened

Marin County supports a northern spotted owl population of possibly 75 pairs. This population is isolated from spotted owl populations to the north by large areas of grassland and shrubs and constitutes the southern end of the subspecies range. Genetic analysis has shown low levels of genetic diversity within and low levels of gene

flow between spotted owl populations in Marin County and Mendocino National Forest. The Marin County population supports the highest known density of northern spotted owls throughout its range (NPS 2005a).

Spotted owls tend to nest in older stands of conifer and hardwood trees that create a tall overstory. Spotted owls often select larger trees with defects, such as broken tops or mistletoe infestations, for nesting, but also have been found nesting in young bay trees in smaller stands. Preliminary pellet analyses indicated that spotted owls forage primarily on dusky-footed woodrats (*Neotoma fuscipes*) in addition to other forest dwelling small mammals and songbirds. Within the planning area, known spotted owl sites are currently limited to Muir Woods National Monument and the Stinson Gulch area (NPS 2005a) (see discussion under Marin County).

Northern spotted owls within the monument are at the southernmost extreme of the species range, and the population in Marin County is genetically isolated, although relatively large; 161 distinct nests were documented between 1998 and 2003 (Stillwater Sciences 2005). This species was listed at the federal level as threatened in 1990. Monitoring in the county over the past several years has shown stable fecundity, with approximately 0.5 female young fledged per breeding female and nearly 90% of nests being occupied for the past several years. Old redwood forests are important nesting habitat; 43% of nests in Marin County are in redwood trees and 36% are in Douglas-fir trees. Across northern California, owls were found to select locations with large-diameter conifer overstory and an understory of large hardwoods. The mean diameter of platform nest trees in Marin County is 36 inches. Two pairs have historically nested within Muir Woods National Monument or immediately adjacent to the monument (Hall 2009).

There are several threats to spotted owls in the region, although the habitat conditions within the monument itself are presently of high quality. Urban development destroys habitat, owls are especially susceptible to West Nile virus (first confirmed in Marin County in 2005), and sudden oak death may affect both nesting habitat and prey species. Additionally, there are anecdotal reports of people disturbing nests and luring owls with mice. Finally, the barred owl is suspected of displacing spotted owls in Marin County. This species, once limited to the eastern United States, has been extending its range over the past century and is now found throughout the Pacific Northwest and in California. Aggressive behavior toward spotted owls has been documented in Marin County, and in 2005, a male barred owl was detected in the monument for the fourth year in a row, which coincided with the second year of spotted owl nest failure in the monument. In 2007, the first breeding pair of barred owls was observed, and breeding was observed again in 2008 (Hall 2009).

Kelly et al. (2003) conducted extensive historical analysis of the location of spotted owl and barred owl territories at five study areas in Oregon and Washington from 1987 to 1999. The study concluded that there had been a steady increase in the number of barred owls at all long-term spotted owl monitoring sites, and that when barred owls invade, the occupancy of territories by spotted owls declines considerably. The study concludes that "land managers and regulatory agencies should regard barred owls as a threat to spotted owls." There is some debate about whether the barred owl in Muir Woods National Monument should be considered native or not (it is listed as such in NPSpecies, but other park planning documents list it as invasive and uncontrolled). Nevertheless, barred owls have been identified as the primary threat to spotted owl recovery in the USFWS final recovery plan. National Park Service staff consider the barred owl to be a species of concern and feel a need to track and potentially manage the species due to its potential impact on spotted owls. It appears that the presence of the breeding barred owls

in the monument has displaced the historically nesting spotted owls (Hall 2009).

Marbled Murrelet – Federal Threatened; State Endangered

See description in the discussion of habitat in San Mateo County.

CULTURAL RESOURCES: GOLDEN GATE NATIONAL RECREATION AREA

INTRODUCTION

Golden Gate National Recreation Area is home to a remarkable constellation of cultural resources, among the most diverse in the entire national park system. A cultural resource may be a tangible entity or a cultural practice. For NPS management purposes, tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places, and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources. The park's planning area covered by this general management plan includes over 366 historic structures, 5 national historic landmark (NHL) districts, 13 National Register of Historic Places properties, 7 national register-eligible properties, 9 documented cultural landscapes, 365 identified and over 500 predicted archeological sites, and the fourth-largest museum collection in the National Park Service. Most of these cultural resources are related to military and maritime commercial themes stretching over a period of more than 200 years, with many precontact archeological resources associated with the Coast Miwok and Ohlone cultures extending back thousands of years. See table 5 for a list of these properties.

The park's nationally significant seacoast fortifications and military installations span the Spanish, Mexican, and American eras and illustrate the military architectural and engineering heritage of the United States and the broad patterns of the nation's history. Other cultural resources include an array of buildings, sites, and features that reflect the local and regional historical industrial, commercial, and recreational development of the San Francisco Bay Area, including the bay's European discovery (San Francisco Bay Discovery Site National Historical Landmark); maritime-related resources such as historic lighthouses, shipwrecks, wharves, piers, docks, and other shoreside embarkation points; and remnants of the area's historic ranching, agricultural, logging, and mining activities.

Some 370 archeological sites have been inventoried, including properties constituting the tangible connection between the Coast Miwok and Ohlone communities and park lands. Historic archeological properties constitute significant, yet incompletely documented, elements of existing national historic landmarks, national register-listed properties, and cultural landscapes. Nine documented cultural landscapes in the park include rural landscapes and dairy ranches. Remnants associated with agricultural pursuits that were carried on by the same families for generations remain extant in the park, comprising a rich legacy of folkways, rural landscapes, and architecture.

Alcatraz Island, a 22.5-acre island in San Francisco Bay, is best known for its reputation as the maximum security, minimum-privilege federal penitentiary that housed some of America's most notorious criminals between 1934 and 1963. However, the island also contains layers of history from its prior uses as a military fort, military prison, federal penitentiary, and as the site of the occupation by Indians of All Tribes from 1969 to 1971.

Although numerous cultural resource studies have been undertaken for Golden Gate National Recreation Area, the park's cultural resource surveys are limited for some significant resource types. Less than 10% of the park has been surveyed for archeological resources. Fifteen cultural landscapes have been identified in the park, but only nine have been inventoried or evaluated. Detailed surveys for archeological, cultural landscape, and ethnographic resources, as well as

historic resource studies, national register eligibility determinations, and inventory updates for the park's List of Classified Structures (LCS), Cultural Landscape Inventory (CLI), and Archaeological Sites Management Information System (ASMIS) will provide critical information needed for park planning and historic property preservation.

Golden Gate National Recreation Area includes recently acquired lands in San Mateo County, which are the subject of a recently completed historic resource study that further identifies historic properties and themes associated with these park lands. The primarily Spanish colonial and Mexican settlement history and the agricultural, military, maritime, and transportation themes of the area are not dissimilar to those of other park lands, and evidence of numerous precontact sites, both inside and adjacent to park lands, suggest important opportunities for joint stewardship between the park and its neighbors.

AREA OF POTENTIAL EFFECT

Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on historic properties. The Advisory Council on Historic Preservation (ACHP) regulations that implement section 106 require that impacts on historic resources be identified and evaluated by determining the area of potential effect (APE) and by identifying cultural resources present in the area of potential effect that are either listed in or eligible for listing in the national register (36 *Code of Federal Regulations* [CFR] Part 800, "Protection of Historic Properties"). The area of potential effect is the geographic area or areas within which an undertaking may directly or indirectly cause alterations to the character or use of historic properties, and it is influenced by the scale and nature of an undertaking. The area of potential effect encompasses both those areas where proposed actions might occur that would directly impact cultural resources, as well as adjacent areas that contain resources that might be indirectly affected (see map 5). The area of potential effect for this general management plan was discussed in a meeting between the National Park Service and the California state historic preservation office (SHPO) on March 16, 2010, and is generally defined as the park boundary and those properties adjacent to the park boundary where potential indirect impacts may occur. A description of the key cultural resources within the area of potential effect follows and is organized by National Register of Historic Places properties, resources that are either eligible or in need of a determination of eligibility for listing in the national register, archeological resources, and ethnographic resources. See the following table for a listing of these properties.

TABLE 5. KEY CULTURAL RESOURCES WITHIN THE AREA OF POTENTIAL EFFECT

Area of Potential Effect: Historic Properties within the Park Boundary (organized by county, alphabetically)				
Resource	**County**	**Listed on National Register**	**National Historic Landmark**	**Areas of Significance**
Alcatraz Island	San Francisco	Yes	Yes	Social History, Engineering, Military, Commerce (District), Historic Archeology
Fort Point National Historic Site	San Francisco	Yes	Yes	Architecture, Maritime History, Military, Historic Archeology
Presidio of San Francisco	San Francisco	Yes	Yes	Hispanic, Historic - Non-Aboriginal, Military, Exploration/Settlement (District), Architecture, Landscape Architecture, Historic Archeology
San Francisco Port of Embarkation	San Francisco	Yes	Yes	Military (District), Architecture
San Francisco Bay Discovery Site	San Mateo	Yes	Yes	Exploration/Settlement
Golden Gate Bridge	San Francisco, Marin (owned by Golden Gate Bridge District, on parkland)	Eligible	Eligible	Engineering, Transportation History
Dipsea Trail	Marin (part of trail is on parkland)	Yes	No	Entertainment/Recreation (Sports) (Structure)
Forts Baker, Barry, and Cronkhite	Marin	Yes	No	Military (District), Architecture, Cultural Landscape, Historic Archeology
Muir Beach Archeological Site	Marin	Yes	No	Coast Miwok History And Archeology
Muir Woods National Monument	Marin	Yes	No	Conservation (District), Architecture, Landscape Architecture
Point Bonita Historic District	Marin	Yes	No	Architecture, Maritime History, Commerce, Transportation (District)
Steamship Tennessee Remains	Marin	Yes	No	Invention, Transportation, Commerce, Maritime Archeology
Hill 640 Military Reservation	Marin	Eligible	No	Military
Hillwood Camp	Marin	Eligible	No	Social History
Olema Valley Historic District	Marin (administered by Point Reyes National Seashore)	Eligible	No	District, Cultural Landscape, Agriculture (Dairy Ranching), Historic Archeology
Ranch M (Golden Gate Dairy)	Marin	Eligible	No	District, Cultural Landscape, Agriculture (Dairy Ranching), Historic Archeology
Ranch A/B (Miwok Stables)	Marin	Eligible	No	District, Cultural Landscape, Agriculture (Dairy Ranching)

TABLE 5. KEY CULTURAL RESOURCES WITHIN THE AREA OF POTENTIAL EFFECT

Area of Potential Effect: Historic Properties within the Park Boundary (organized by county, alphabetically)				
Resource	**County**	**Listed on National Register**	**National Historic Landmark**	**Areas of Significance**
Sara Seaver Randall House	Marin (administered by Point Reyes National Seashore)	Eligible	No	Agriculture (Dairy Ranching)
Camera Obscura	San Francisco	Yes	No	Engineering (Structure)
Fort Mason Historic District	San Francisco	Yes	No	Architecture, Military, Transportation, Landscape Architecture (District), Historic Archeology
Fort Miley Military Reservation	San Francisco	Yes	No	Military (District)
King Philip and *Reporter* Shipwreck Site	San Francisco	Yes	No	(Naval) Architecture, Transportation, Commerce, Maritime History
Merrie Way Stands Site	San Francisco	Eligible	No	Recreation History, Historic Archeology
Mile Rock Tunnel	San Francisco	Eligible	No	Engineering
Point Lobos Archeological Site	San Francisco	Yes	No	Ohlone History, Archeology
Pumping Station 2, San Francisco Fire Department Auxiliary Water Supply System	San Francisco (on park land owned by City of San Francisco)	Yes	No	Community Planning And Development, Engineering (Structure)
Six-inch Rifled Gun No. 9 (Baker Beach)	San Francisco	Yes	No	Military (Object)

Table 5. Key Cultural Resources Within the Area of Potential Effect (continued)

Area of Potential Effect: Historic Properties Adjacent to Park Boundary				
Resource	**County**	**Listed on National Register**	**National Historic Landmark**	**Areas of Significance**
Aquatic Park Historic District	San Francisco (owned and managed by San Francisco Maritime National Historical Park)	Yes	Yes	Architecture, Community Planning And Development, Art, Military (District)
Point Montara Light Station	San Mateo (owned and managed by U.S. Coast Guard)	Yes	No	Architecture, Maritime History, Commerce, Transportation (District)

Table 5. Key Cultural Resources Within the Area of Potential Effect (continued)

Area of Potential Effect: Historic Properties Adjacent to Park Boundary				
Resource	**County**	**Listed on National Register**	**National Historic Landmark**	**Areas of Significance**
San Francisco Veterans Affairs Medical Center	San Francisco (owned and managed by Department of Veterans Affairs)	Yes	No	Architecture, Engineering, Health/Medical (District)

Table 5. Key Cultural Resources Within the Area of Potential Effect (continued)

Area of Potential Effect: Other Properties Within the Park, Potentially Eligible for National Register of Historic Places (in need of determination of eligibility)				
Resource	**County**	**Property Type**	**Acres of Significance**	**Management Jurisdiction**
Bolinas Copper Mines	Marin	Site	Mining and Industrial history	Point Reyes National Seashore
Bolinas Lagoon Coast Miwok Sites	Marin	District	Coast Miwok history, archeology, and heritage	Multiple
Druid Heights	Marin	District	Social History	NPS
Muir Beach Coast Miwok Sites	Marin	District	Coast Miwok history, archeology, and heritage	NPS
Muir Woods Inn	Marin	Structure	Tourism, architecture and heritage	NPS
Elk Valley Coast Miwok Site	Marin	Site	Coast Miwok history, archeology, and heritage	NPS
Marin Headlands Coast Miwok Sites	Marin	District	Coast Miwok history, archeology, and heritage	Multiple
Miwok Trail	Marin	Structure	Coast Miwok history, heritage and recreation	Multiple
Tomales Bay and Olema Valley Coast Miwok Sites	Marin	District	Coast Miwok history, archeology, and heritage	Point Reyes National Seashore
Fort Mason Ohlone Sites	San Francisco	District	Ohlone history, archeology, and heritage	NPS
Crissy Field Ohlone Sites	San Francisco	District	Ohlone history, archeology, and heritage	NPS
China Beach	San Francisco	District	Architecture, recreation	NPS
Cliff House	San Francisco	Structure	Architecture, recreation	NPS

Area of Potential Effect: Other Properties Within the Park, Potentially Eligible for National Register of Historic Places (in need of determination of eligibility)				
Resource	**County**	**Property Type**	**Acres of Significance**	**Management Jurisdiction**
Seacoast Fortifications of San Francisco Bay	Marin, San Francisco, San Mateo	Individual properties already listed in National Register: may be eligible as NHL	Military (District), architecture, engineering, cultural landscape, historic archeology	NPS
Sutro Baths	San Francisco	Site	History, engineering, historic archeology	NPS
Sutro Heights District	San Francisco	Multiple Sites	History, cultural landscape, historical archeology	NPS
Ocean Terrace Site	San Francisco	Site	Historical archeology	NPS
Marine Exchange Lookout (Octagon House)	San Francisco	Structure	Maritime history, architecture	NPS
O'Shaughnessy Seawall (Ocean Beach)	San Francisco	Structure	Engineering, urban design, recreation	NPS
Neptune Shipwreck Site	San Francisco	Shipwreck	Maritime archeology	Multiple
Rancho Corral de Tierra	San Mateo	District	Agriculture	NPS
Martini Creek Ohlone Sites	San Mateo	District	Ohlone history, archeology, and heritage	NPS
Francisco Guerrero Adobe Site	San Mateo	Site	social history, Mexican California	Multiple
Phleger Estate Logging Sites	San Mateo	District	1850s redwood logging history	NPS
Shelldance Nursery	San Mateo	Site	Agriculture (floriculture), conservation	NPS
Devil's Slide WWII Coastal Defense Facilities	San Mateo	Site	Military history	Caltrans
Shipwrecks of the Golden Gate	Marin, San Francisco, San Mateo	Sites	Maritime archeology	Multiple

CULTURAL RESOURCES LISTED IN OR ELIGIBLE TO BE LISTED IN THE NATIONAL REGISTER OF HISTORIC PLACES

National Historic Landmarks

National historic landmarks are buildings, sites, districts, structures, and objects that have been determined by the Secretary of the Interior to be nationally significant in American history and culture. National historic landmarks possess exceptional value or quality in illustrating or interpreting the heritage of the United States in history, architecture, archeology, technology, and culture, and possess a high degree of integrity of location, design, setting, materials, workmanship, feeling, and association. National historic landmarks are significant because they

- are associated with events that have made a significant contribution to, and are identified with, or that outstandingly represent, the broad national patterns of U.S. history; or
- are associated importantly with the lives of persons nationally significant in the history of the United States; or
- represent some great idea or ideal of the American people; or
- embody the distinguishing characteristics of an architectural type specimen exceptionally valuable for the study of a period, style, or method of construction, or that represent a significant, distinctive, and exceptional entity whose components may lack individual distinction; or
- are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition, but collectively compose an entity of exceptional historical or artistic significance, or outstandingly commemorate or illustrate a way of life or culture; or
- have yielded or may be likely to yield information of major scientific importance by revealing new cultures, or by shedding light on periods of occupation over large areas of the United States.

All national historic landmarks are included in the National Register of Historic Places, which is the official list of the nation's historic properties worthy of preservation. National historic landmarks constitute more than 2,400 of the almost 83,000 entries in the national register; the other entries in the national register are of state and local significance. The process for listing a property in the national register is different from that for national landmark designation, with different criteria and procedures. Some properties are recommended as nationally significant when they are nominated to the national register, but before they can be designated as national historic landmarks, they must be evaluated by the NPS National Historic Landmark Survey, reviewed by the National Park System Advisory Board, and recommended to the Secretary of the Interior.

Tomales Bay and Olema Valley Coast Miwok Sites
Sara Seaver Randall House
Olema Valley Historic District
Bolinas Copper Mines
Bolinas Lagoon
Bolinas Lagoon Coast Miwok Sites
San Rafael
Richmond
Mill Valley
Muir Woods National Monument
Muir Woods Inn
Hillwood Camp
Dipsea Trail
Druid Heights District
Miwok Trail
Hill 640 Military Reservation
Tiburon
Marin City
San Francisco Bay
Berkeley
Ranch M (Golden Gate Dairy)
Pacific Ocean
Ranch A/B (Miwok Stables)
Sausalito
Angel Island State Park
Muir Beach Coast Miwok District
Elk Valley Coast Miwok Site
Marin Headlands Coast Miwok Sites
Fort Baker
Steamship *Tennessee* Remains
Fort Cronkhite
Fort Barry
Alcatraz Island
Golden Gate Bridge
Point Bonita Historic District
Crissy Field Ohlone Sites
Pumping Station #2, SF Fire Dept.
Aquatic Park Historic District
Fort Point National Historic Site
Oakland
Fort Mason Ohlone Sites
China Beach
Fort Mason Historic District
San Francisco Port of Embarkation
Presidio of San Francisco
Six-inch Rifled Gun No. 9 (Baker Beach)
O'Shaughnessy Seawall
City of San Francisco
King Philip and *Reporter* Shipwreck Site
San Francisco Bay
Neptune Shipwreck
Daly City
Milagra Ridge
SFO
San Francisco Bay Discovery Site
Shelldance Nursery
San Mateo County
Pacifica
San Mateo
Martini Creek Ohlone Sites
Point Montara Light Station
Rancho Corral de Tierra
Francisco Guerrero Adobe Site
Half Moon Bay
Pillar Point Bluff
Phleger Estate Logging Sites

Seacoast Fortifications of San Francisco Bay:

Numerous individual sites comprising the potential Seacoast Fortifications National Landmark extend from Hill 640 Military Reservation in the north to Milagra Ridge in the south.

Area of Detail

Marine Exchange Lookout (Octagon House)
Mile Rock Tunnel (Outfall)
Fort Miley Military Reservation
Point Lobos Archeological Sites
Sutro Baths
Cliff House
Ocean Terrace Site
San Francisco Veterans Administration Medical Center
Merrie Way Stands Site
Camera Obscura
Sutro Heights
Sutro District

Shipwrecks of the Golden Gate:

There are numerous individual shipwreck sites along the extent of the park shoreline from Bolinas Lagoon in the north to Pilar Point in the south.

Area of Potential Effect Historic Properties

Golden Gate National Recreation Area
Muir Woods National Monument

Historic Property

Area of Potential Effect
Park Owned and Managed
Lands and Adjacent Historic Sites

N
0 3
Miles

Note: See the associated list of historic properties for more detailed information about the sites indicated on this map.

U.S. Department of the Interior
National Park Service – GGNRA/DSC
641 / 120025 April 23, 2013

Map 5. Area of Potential Effect, Historic Properties

Within the park's boundaries, the Secretary of the Interior has designated five national historic landmarks:

1. Alcatraz Island
2. Fort Point National Historic Site
3. Presidio of San Francisco
4. San Francisco Bay Discovery Site
5. San Francisco Port of Embarkation

In addition, Aquatic Park Historic District, a national historic landmark managed by San Francisco Maritime National Historical Park, is adjacent to the Golden Gate National Recreation Area and could be affected by actions proposed in the general management plan. Brief descriptions of all of these properties are included here.

Alcatraz Island National Historic Landmark

Alcatraz Island includes cultural landscapes, historic structures, archeological sites, object collections, and stories associated with its use as a Civil War fort, military prison, federal penitentiary, and the site of the Indian occupation of 1969 to 1971. Because of its strategic location in San Francisco Bay, the island has been the site of events that have had a substantial impact on the nation as a whole, from before the Civil War through the American Indian occupation. Its significance in the areas of military history, social history (penology), and maritime commerce (related to the Gold Rush and the Civil War) is enhanced by the integrity of its resources, which has resulted from the fact that access to the island has been strictly limited throughout its history.

Maritime commerce was aided by the first U.S. lighthouse on the Pacific Coast built on the island in 1854; its successor still serves. First garrisoned on December 30, 1859, the post was officially designated Alcatraz Island but was often referred to as Fort Alcatraz. By the start of the Civil War, Alcatraz was the key fort in the center of the most significant Pacific port in 19th century America. It mounted the first permanent cannon on the west coast of the United States, and featured a brick and masonry defensive barracks known as the "Citadel," which may have been unique in the annals of U.S. military architecture. Alcatraz was designated as the official military prison for the entire Department of the Pacific on August 27, 1861, and was the first official army prison in the nation.

When Alcatraz became a civilian penitentiary in 1934, it quickly gained nationwide attention due to its association with many of the most infamous criminals of the gangster era and the bloody escape attempts made from there. It is representative of the far end of the penology spectrum because it was a prison designed for punishment and incarceration only, not rehabilitation. It is of national importance in this regard because of its use as a repository of incorrigibles throughout the federal prison system, including Robert Stroud ("Birdman of Alcatraz"), Alphonse Capone, and George Kelly Barnes ("Machine Gun Kelly"). Alcatraz Island is certainly the best known prison in U.S. history and arguably, along with France's "Devil's Island," is among the most infamous prisons in the world.

Alcatraz Island was occupied by Indians of All Tribes from November 1969 to June 1971 during an internationally publicized protest to focus attention on the plight of American Indians and to assert the need for Indian unity and solidarity for achieving self-determination and securing political rights. Thus, the occupation increased awareness of the American Indian's political, economic, and social concerns and provided the foundation for what would become a political movement—the American Indian Movement—to promote racial pride and secure and protect Indian rights. Tangible evidence of their occupancy on the island includes graffiti and physical alterations attributed to their actions.

The period of significance for Alcatraz stretches from 1847, when the island was first surveyed for military fortifications, to 1971 when the National Park Service acquired the land. This period of significance covers the military fortifications period (1847–1907), military prison period (1861–1933), federal prison period (1933–1963), and American Indian occupation period (1969–1971). Alcatraz Island was opened to the public as part of Golden Gate National Recreation Area in 1973, listed in the National Register of Historic Places in 1976, and designated as a national historic landmark in 1986.

The current landscape of Alcatraz consists of features and characteristics from each of the island's historically significant periods that are used to define cultural landscapes—buildings, structures, spatial organization, circulation, small-scale features, topography, vegetation, natural systems and features, archeological sites, and land use. It includes numerous contributing buildings and structures and 81 areas of historic archeological concern not yet listed in the landmark inventory.

Fort Point National Historic Site

Fort Point National Historic Site is within the Presidio of San Francisco, near the south anchorage of the Golden Gate Bridge. Though this landmark is within the park boundary, it is not included in the planning area. Constructed between 1853 and 1861, Fort Point is the only example of a casemated Third System fort completed on the Pacific Coast. It is also the most unaltered such fort left in the United States. Situated on the southern tip of the Golden Gate, the fort was a vital part of San Francisco's harbor defense during the Civil War and played a role in defending the harbor entrance during World War I and World War II. Associated historic resources include Battery East, built to supplement the obsolete brick fort, the historic seawall and promenade, and numerous historic landscape features and historic archeological sites.

Presidio of San Francisco National Historic Landmark

Established in 1776 by the Spanish and continued as a military post under the Mexicans and the Americans, the Presidio possesses a visual unity and a high degree of integrity that relates well to its historical importance and continuity through successive periods of development. The Presidio of San Francisco was the oldest Army installation operating in the American West and was one of the longest-garrisoned posts in the country. More than 200 years of military occupation of the Presidio have resulted in the development of a complex historic district of several overlaying historic landscapes, each composed of buildings, structures, objects, sites, and other features that represent multiple phases of development. Among the Presidio's over 450 historic buildings are examples of every major building period of U.S. military history since the 1850s. Over the years, the U.S. Army's careful site planning and extensive landscape design complemented the natural beauty of the site and made the Presidio unique among U.S. Army posts. As headquarters for the protection of the Bay and for military expeditions throughout the West, the Presidio remained strategically the most significant military post on America's Pacific Coast during most of its extended history, until its closure in 1994. In 1994, the U.S. Army transferred the Presidio to the National Park Service. In 1996, the Presidio Trust Act enacted by Congress, gave jurisdiction of the inland area of the Presidio (known as Area B) to the Presidio Trust; the National Park Service continues to manage the shoreline areas known as Area A. The Presidio is not part of the planning area covered by this general management plan. The Presidio Trust has prepared a revised national historic landmark document, which is currently being reviewed by the National Park Service. Additionally, under the terms of a 2008 programmatic agreement, Caltrans and the San Francisco County Transportation Authority are committed to updating the

NHL document upon completion of the Doyle Drive project.

San Francisco Bay Discovery Site National Historic Landmark

The city of Pacifica, California, the site of the discovery of San Francisco Bay, is the place where the Portola Expedition of 1769 crossed Sweeney Ridge and viewed one of the world's largest sheltered anchorages for the first time. From the crest of Sweeney Ridge, the view extends inland to the bay and north along the Pacific coastline as far as Point Reyes. This landmark is on the crest of Sweeney Ridge and commemorates the place from which the main body of Spanish explorer Gaspar de Portola's expedition first sighted San Francisco Bay on November 4, 1769. The bay would become the most important harbor on the Pacific Coast of the United States and one of the great anchorages of the world. Following this discovery by the Spaniards, a presidio and two missions were established in what is now San Francisco. No structures are on the site nor are any in the immediate vicinity. It is likely that no structures ever existed there. The Portola Expedition shaped the history of San Francisco Bay and the surrounding region. The discoveries made during this expedition influenced a variety of peoples, particularly the American Indian inhabitants. Today, the site consists essentially of two knolls from which the Portola Expedition members first saw the bay. This site comprises approximately 18.15 acres. There are two commemorative monuments that celebrate the Gaspar de Portola Expedition. The view has changed considerably with the growth of the Bay Area, now including widespread suburban development.

San Francisco Port of Embarkation National Historic Landmark

This historic district is listed as a national historic landmark for its association with World War II in which it was defined as the principal port on the West Coast for delivering personnel, material, weapons, and ammunition to the military campaigns in the Pacific. During the months after the United States first entered World War II, the U.S. Army's San Francisco Port of Embarkation shipped more military supplies than all other military ports in the United States combined.

The statistical returns for the entire war showed that San Francisco was second only to New York in the numbers and amounts of personnel shipped to the war zones. Between December 1941 and August 1945, 1,745,000 personnel embarked at San Francisco. In addition, more than half a million veterans of the war debarked at San Francisco during the same period. An equal number came through the Golden Gate after conclusion of hostilities. All American dead being returned to the United States from the Pacific were brought through the port. Japanese and German prisoners of war were processed through this port's facilities, as well.

During the war years, more than 25 million measurement tons of cargo were shipped through San Francisco. For various periods of time between 1941 and 1944, the ports of Los Angeles, California; Portland, Oregon; and Seattle, Washington, were administered by San Francisco. In the Bay Area, Fort Mason oversaw port operations for no fewer than 13 other installations. San Francisco was the primary port for army troops and supplies in the central, south, and southwest Pacific areas. Moreover, the task force that drove the Japanese from Alaska's Aleutian Islands was mounted from San Francisco.

The district is significant within the area of military history for the period from 1912 to 1945. It encompasses 210 acres, 14 buildings, and 5 structures at lower Fort Mason. Building 201 at upper Fort Mason, currently the park headquarters, is a contributing resource to the district.

Aquatic Park Historic District National Historic Landmark

This property is outside the general management plan planning area but is

adjacent to the park's Fort Mason Historic District in San Francisco. Aquatic Park Historic District is bounded by Van Ness Avenue and Hyde and Polk streets and has an important interrelationship with Golden Gate National Recreation Area. Developed from 1936 to 1939, the park was one of California's largest Works Progress Administration (WPA) projects, reflecting President Franklin D. Roosevelt's policy of creating employment during the Great Depression. The centerpiece of this group of "streamline moderne" structures, all employing nautical metaphors, is a multipurpose structure containing the bathhouse, concession stand, and lounge. Its rounded walls, recessed upper stories, tubular steel railings, and porthole windows were designed to create the illusion of an ocean liner. Murals and other artwork carry out the nautical theme. This main building, lifeguard stations, stadium, Sea Scout building, a seawall, and a semicircular pier form the Aquatic Park Historic District, which now is part of the San Francisco Maritime National Historical Park. The district contains 10 acres of land with three buildings and five structures that are significant for the period from 1920–1945.

Potential National Historic Landmark Properties

Coastal Seacoast Fortifications of San Francisco Bay

The coastal fortifications of San Francisco Bay, which are currently being evaluated for designation as a national historic landmark, today comprise what is widely considered the most comprehensive collection of military architecture and coastal defense systems and the finest surviving examples of military engineering for coastal defense in the United States. The significance of the seacoast fortifications structures of the Bay Area as a group is of the highest order. These fortifications span San Mateo (Milagra Ridge), San Francisco (Presidio, Fort Funston, Fort Mason, Fort Miley, Alcatraz Island and Fort Winfield Scott in the Presidio), and Marin County (Forts Baker, Barry, and Cronkhite) and encompass over 40 major caliber gun batteries and scores of other supporting structures. Moreover, as well-preserved examples of nearly every important development in military fortification architecture and engineering from before the Civil War to the guided missile era, they embody an extraordinary range of distinguishing characteristics of military architecture, engineering, style, and construction and outstandingly illustrate military culture and technique. They are tangible manifestations of changing periods in U.S. history and the changing military responses, and provide associative links with people important to the history of the nation as a whole—from John C. Fremont and "Kit" Carson to Irvin McDowell and Douglas MacArthur. The military reservations that provide a relatively unchanged physical context for these fortifications also provide a spectacular scenic backdrop of largely undeveloped open space at the edge of a great urban metropolis.

Golden Gate Bridge

The Golden Gate Bridge is on park property, but is owned and managed by the Golden Gate Bridge, Highway, and Transportation District. It was determined eligible for listing in the national register in 1980 and was designated a California State Historic Landmark in 1990. The Golden Gate Bridge has not yet been listed in the national register. In 1997, the National Park Service prepared a national historic landmark nomination for the Golden Gate Bridge, but it has not yet been designated as a landmark. The National Park Service was a concurring party to a memorandum of agreement for the Golden Gate Bridge Physical Suicide Deterrent System Project to complete and submit a landmark nomination for the Golden Gate Bridge that includes significant associated buildings, structures, roadways, and pedestrian circulation features and landscaping.

Olema Valley Historic District

This rural historic landscape consists of former dairy ranches in west Marin County and, although within the authorized boundaries of Golden Gate National Recreation Area, is managed by Point Reyes National Seashore for reasons of geographic proximity.

National Register of Historic Places

The National Register of Historic Places is a list of properties (districts, sites, buildings, structures, and objects) that possess the quality of significance in U.S. history, architecture, archeology, engineering, and culture, as well as integrity of location, design, setting, materials, workmanship, feeling, and association. Properties listed in the national register are significant because they

- are associated with events that have made a significant contribution to the broad patterns of our history; or
- are associated with the lives of persons significant in our past; or
- embody distinctive characteristics of a type, period or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- have yielded, or may be likely to yield, information important in prehistory or history.

Properties Listed in the National Register of Historic Places

Marin County

Dipsea Trail. The historic Dipsea Trail, which extends from Mill Valley to Stinson Beach, runs through parts of Muir Woods and is host to one of the oldest foot races in the nation.

Forts Baker, Barry, and Cronkhite. These military fortifications and installations comprise some of the earliest coastal defense artillery batteries in Marin County and are significant landmarks for tracing the development of the U.S. defense system. The site on which the forts were constructed at the northern point of the Golden Gate was strategically chosen because it commands the approaches to the entrance of San Francisco Bay. The batteries and their ancillary structures (observation posts and cantonments) created a coordinated system of defense at the Golden Gate from the Civil War to the Cold War. The scope of the landscape afforded by the three military fortifications includes both American Indian and European-associated attributes.

In 1866, Forts Baker and Barry were purchased to be used for military defense. Fort Cronkhite was acquired in the same manner in 1914, but was considered a portion of Fort Barry until officially designated as Fort Cronkhite in 1937. The fortifications proposed for construction at the northern point of the Golden Gate were to augment those at the Presidio of San Francisco and elsewhere in San Francisco to prevent successful passage of hostile ships through the Golden Gate into the bay. The batteries and their ancillary structures (observation posts and garrisons) created a coordinated system of defense at the Golden Gate. From the Civil War to the Cold War eras, this system of defense offered equipment ranging from smooth-bore, muzzle-loading cannon to rifled, breach-loading artillery, including antiaircraft and antibreach-landing defense from World War II and NIKE anti-aircraft missiles from the Cold War. The Fort Cronkhite cantonment is not only highly representative of the once ubiquitous 700-Series World War II mobilization cantonments; it is considered the best-preserved example of its type in the United States. The district is spread over 1,400 acres

and encompasses over 100 historic structures.

Muir Beach Archeological Site. This Coast Miwok archeological site dating from about AD 1300 is one of only a few such properties known in southwestern Marin County. It was recorded in 1909 and appears to be part of a series of periodic villages or encampments formed between AD 1100 and as late as 1800 around the estuary at the mouth of Redwood Creek below present-day Muir Woods.

Muir Woods National Monument. In 2008, Muir Woods National Monument Historic District was listed in the National Register of Historic Places for its significance as an early and lasting example of natural resource conservation by the federal government. In addition to the forest of giant redwood trees, the monument's collection of historic buildings, structures, and cultural landscapes are representative of the NPS rustic design style. It is a 425-acre historic district with five contributing buildings and numerous historic structures that comprise the principal elements of the cultural landscape. See the "Cultural Resources—Muir Woods National Monument" section of this document for more detailed information.

Point Bonita Historic District. The Point Bonita Historic District, at the entrance to San Francisco Bay from the Pacific Ocean, includes both the Point Bonita Light Station and the Point Bonita Life-Saving Station and associated landscape features. Established in 1855 to mark the entrance to San Francisco Bay and to warn of local navigational hazards, the district is linked to the historic growth of commercial shipping along the West Coast and to California's critical reliance on maritime transportation and the aids that made navigation possible. The light station contains an intact lighthouse tower with an intact lens and an associated fog signal building. The tower and fog signal building, clustered together at the end of the rocky point, retain a high degree of integrity and give cohesiveness to the light station site. This is heightened by the buildings' separation from the main access path by a pedestrian suspension bridge; Point Bonita is the only lighthouse in the United States approached by a suspension bridge. The light station retains the general form of a formal late 19th / early 20th century light complex.

Steamship *Tennessee* Remains. The SS *Tennessee*, a side-wheel commercial passenger-cargo steamer, owned by the Pacific Mail Steamship Company and destined for Panama, crashed against the rocks in Indian (Tennessee) Cove, some three miles north of Point Bonita on March 6, 1853, amid dense fog and high surf. Today, the Tennessee Valley Trail leads visitors to the cove where the ship's remains are occasionally revealed by the restless surf.

San Francisco County

Camera Obscura. The Camera Obscura was added to the National Register of Historic Places in 2001 on the basis of the engineering significance of the camera mechanism—the largest camera obscura remaining in situ in the United States. The exterior of the building was extensively modified in 1957 to appear as a giant camera, and may be reevaluated for historical significance upon reaching 50 years of age.

Fort Mason Historic District. Beginning in 1797 and lasting through the Spanish and Mexican administrations of Alta California, Fort Mason (including Batteria San José, Punta Medanos, Battery Yerba Buena, Point San José, Black Point, and the Post of Point San José) was one of two sites in San Francisco Bay that was armed with artillery for the defense of the harbor. For over 40 years of U.S. administration, from the Civil War to the post-Spanish-American War era, Fort Mason played a role in the coastal defenses of the Bay. It also served as an important element in the first submarine mining of San Francisco Bay during the Spanish-American War. From the Spanish-American War to the Korean War, Fort Mason was the headquarters of the San Francisco Port of Embarkation.

Fort Mason contains a collection of military structures dating from the 1850s to the Korean War that illustrates the evolution of an army post and seacoast fortifications over a period of some 100 years. The variety and contrasts among many styles of the architecture, the effect of the U.S. Army's caste system on the quarters, the charm of the earliest officers' row, the simple lines of the Endicott battery, the WPA architecture of the Great Depression, and the U.S. Army's determination in landscaping all blend together to present a history of this place and its times. The district includes 146 historic buildings and structures spread over 68 acres of land. A wooden pier (Pier 4) and small buildings at its terminus are associated with prison operations on Alcatraz Island. The historic landscape is also a contributing feature of the district. Five archeological sites associated with Ohlone native peoples and other historic archeological sites are at Fort Mason; however, they are listed in a separately themed historic district nomination.

Fort Miley Military Reservation. This historic district is a military landscape composed of battery emplacements, fire control stations, and searchlight facilities that served as part of the defense system for the strategic harbor of San Francisco. These features of East and West Fort Miley were part of the defense system for the strategic harbor of San Francisco, long regarded by army engineers and strategists as the most important harbor on the west coast of the United States. The fortification of Point Lobos in 1899 marked the final phase of the Endicott system of seacoast defense, when it was determined that the guns and mortars should be placed as far toward the sea as possible and that the inner harbor defense represented by the early Endicott-type batteries was of less importance.

The guns of Fort Miley, together with those of Fort Barry on the northern side of the Golden Gate, became San Francisco Bay's important outer line of defense at the turn of the last century. The massive concrete and earth batteries, Chester and Livingston, represented the latest in design and engineering of the Endicott works as of 1900. Later installations at Fort Miley, such as a coastal searchlight powerhouse and fire control stations for other and later batteries, mark further advances in the theory, practice, and technology of seacoast defenses.

Fort Miley's continuing importance in the harbor defenses of San Francisco is illustrated by construction of a 6-inch gun battery during World War II and the subsequent arming of this battery as late as 1948—the last of the coastal guns to be mounted in the San Francisco Bay Area.

King Philip / Reporter Shipwreck Site. The *King Philip*, a three-masted wooden clipper ship named for the Indian chief who was involved in King Philip's War in 1675, crashed on Ocean Beach amid heavy surf on January 25, 1878, after leaving San Francisco without cargo. First launched in 1856, the ship went into the lumber trade working for Pope and Talbot of San Francisco after its glory days as a clipper. The site and the ship's remains have also been associated with the 1876 three-masted schooner *Reporter*, which wrecked at the same location March 13, 1902. The remains appear whenever storm surf scours the beach sands low enough to expose the hull.

Point Lobos Archeological Sites. The Point Lobos sites include two precontact Ohlone archeological sites dating from about AD 300–1100. These sites are encampments in the dunes of western San Francisco that evidence harvesting of sea mammals and shellfish from the nearby Pacific shoreline. They are among a handful of precontact sites left in San Francisco.

Pumping Station 2, San Francisco Fire Department Auxiliary Water Supply System. Pumping Station 2 of the San Francisco Fire Department Auxiliary Water Supply System represents an example of an innovatively planned and designed earthquake-proof fire fighting system for San

Francisco. The pumping station is significant within the areas of community planning and engineering for the City of San Francisco. Its period of significance is 1912 to 1975. Although the building is sited on park land in the Fort Mason Historic District, the facility is still owned and used today by the City of San Francisco.

Six-inch Gun No. 9 (Baker Beach). The Six-inch Gun Number 9 and disappearing carriage were received by the National Park Service in 1977 from the Smithsonian Institution. The gun and carriage were installed at gun emplacement Number Four at Battery Chamberlin, in the Presidio of San Francisco, and are the same type originally used there. Battery Chamberlin is an Endicott-era battery completed and armed in 1904 with four 6-inch guns mounted on disappearing carriages. The battery was built to protect underwater minefields laid outside the Golden Gate during the time of war. The original guns were dismounted in 1917 for use in World War I, but the battery was modified to receive two 6-inch guns on simple barbette carriages in 1920. During World War II, the Sixth Coast Artillery (Harbor Defense) Regiment, Battery "D," manned the two guns at Battery Chamberlin, which were placed under camouflage netting to hide them from potential air attack. In 1948, the Coast Artillery Corps was deactivated, the battery disarmed, and the guns scrapped. Today, an underground magazine contains photos and small exhibits on the harbor defenses of San Francisco. Operation of the gun and the magazine are open to the public periodically.

In addition to these properties that are within park boundaries, there are two additional properties within the area of potential effect that are adjacent to the park boundary and could be affected through actions proposed in this plan. These properties include:

Point Montara Light Station. Point Montara Light Station District covers 73 acres containing three contributing buildings and one contributing structure. The Light Station was established in 1875 as the Point Montara Fog Signal, and the house was built for the keepers. The first light was not installed until 1900—a simple lantern hung on a post. In 1912, a Fresnel lens was mounted on a skeleton tower, and in 1928, the existing cast-iron lighthouse was built to house the lens. The old-fashioned fog horn continued to be important because the fog on this part of the coast is often thick enough to restrict even the bravest beam. The property is owned and managed by the U.S. Coast Guard, but will likely be added to the park in the near future.

San Francisco Veterans Affairs Medical Center. This property occupies a 29-acre campus in the northwest corner of San Francisco, of which the historic district is approximately 12 acres. It is surrounded on three sides by Fort Miley and is owned and managed by the Department of Veterans Affairs.

Properties Determined to be Eligible for Listing in the National Register of Historic Places

Several properties within the park boundary have been identified, evaluated, and assessed for their eligibility for listing in the National Register of Historic Places. The term eligible for inclusion in the national register refers to properties formally determined as such in accordance with regulations of the Secretary of the Interior and to all other properties that meet national register criteria without a formal determination. For purposes of park management and planning, these properties are treated as contributing resources.

Marin County

Sara Seaver Randall House. Habitation of one of the earliest Anglo settlers in Marin County. The property is managed by Point Reyes National Seashore.

Hill 640 Military Reservation. This reservation, including the cultural landscape and the remains of its radar set and fire control stations are prime examples of the methods that evolved for the better direction of coast artillery fire against enemy vessels at sea. Overlooking the Pacific Ocean and the southern end of Stinson Beach, they are the best surviving representatives of the most northerly complexes of fire control installations for the defense of San Francisco Bay during the critical years of World War II. The radar, a surface detector set, was the first of its type assigned to the San Francisco Harbor defenses. These features are little disturbed from World War II and retain high integrity.

Ranch M (Golden Gate Dairy). The Golden Gate Dairy at the lower end of Redwood Creek is one of the last agricultural operations remaining with historic integrity intact. It was originally one of dozens of Portuguese-owned dairies in southern Marin County. The main house was built circa 1898–1900 by Azorean immigrant M. A. Mattos. The Lopez family operated a Grade A dairy here from approximately 1943 to 1962. The site contains several residences, corrals, utilitarian structures, fencelines, pastures, windbreaks, and historic archeological deposits. The cultural landscape of the Golden Gate Dairy includes residences, corrals, utilitarian structures, fencelines, pastures, and windbreaks.

Ranch A/B (Miwok Stables). The Rapozo Ranch in the Tennessee Valley of the Marin Headlands, currently operated as the Miwok Ranch or Stables, is one of the last agricultural operations remaining with intact historic integrity. It was originally one of dozens of Portuguese-owned dairies in southern Marin County. The main house was probably built circa 1903 by Azorean immigrant M. F. DaCunha, the first single owner of the ranch. The ranch was used by the Rapozo family from 1945 to the present. The site contains a hay barn, riding barn, sanitary (dairy) barn, two residences, corrals, a eucalyptus windbreak, and other ranching features.

Hillwood Camp. The earliest surviving example in Marin County of a rural camp reflective of an effort to immerse urban-dwelling youth in a natural environment. The property includes the main lodge and associated features.

Olema Valley Historic District. A collection of properties along State Route 1, north of Bolinas representing a cultural landscape of rural farming from the late 19th and early 20th century period. The district is managed by Point Reyes National Seashore.

San Francisco County

Merrie Way Stands Site. A historic archeological site associated with an early San Francisco amusement park established by Adolph Sutro at Land's End in 1895. The pleasure ground and its concession stands lining Lobos Avenue existed until about 1920, when the last of the amusement structures were demolished.

Mile Rock Tunnel. Completed in 1915, the tunnel is an example of the reconstruction and reconfiguration of the city of San Francisco's public works system following the 1906 earthquake. Designed by M. M. O'Shaughnessy, a San Francisco city engineer best known for his design of the Hetch Hetchy Water System, the tunnel was the first constructed in the city using a combination of open-cut timber cribbing and boring through solid rock, a technological and engineering innovation for the city. It served as the storm drainage facility for the Sunset and West Mission districts and portions of the Richmond and Ingleside districts.

Properties Potentially Eligible for Listing in the National Register of Historic Places

Potentially eligible properties include those that have been identified by park staff and other cultural resource professionals as being potentially eligible for listing in the national register. These properties need to be further assessed and evaluated in order to make a determination of eligibility in the near future. A determination of eligibility would be made in advance of activity or work that could directly affect them.

Marin County

Bolinas Copper Mine. The scenic Wilkins Ranch, at the head of Bolinas Lagoon, witnessed three waves of mining fever on the upper slopes of Bolinas Ridge, beginning in the 1860s. The Chetco Mining Company, more successful than its predecessors, closed its doors in 1918; it was the last operation to work the vein. Cultural landscape features include the mine's adit and shaft, a mining road, concrete foundations and cabin site, a rusty boiler and cable, and other large debris. The property is managed by Point Reyes National Seashore.

Bolinas Lagoon Coast Miwok Sites. A series of four precontact archeological sites that contain significant information on Coast Miwok history in southwestern Marin County.

Druid Heights. Potentially significant as the site of a colony of artists, writers, and Zen philosophers (Alan Watts) influential in the development of the counterculture of the 1960s.

Muir Woods Inn. Potentially significant for its contribution to local tourism at Muir Woods National Monument.

Marin Headlands Coast Miwok Sites. A series of three precontact archeological sites that contain significant information on Coast Miwok history near Rodeo Lagoon in Fort Barry and Fort Cronkhite.

Miwok Trail. Potentially significant as one of the earliest trails in the region.

Muir Beach Coast Miwok Sites. A district of three precontact archeological sites, including the national register Muir Beach Archeological Site that encompass the Big Lagoon area of the mouth of Redwood Creek.

San Francisco County

China Beach. Potentially significant for its architecture and design as an early post–World War II civic recreational complex.

Crissy Field Ohlone Sites. A district of two precontact archeological sites along Crissy Field in the Presidio of San Francisco.

Fort Mason Ohlone Sites. A district of six precontact archeological sites in Fort Mason, constituting the densest archeological site cluster remaining in the city of San Francisco.

Marine Exchange Lookout Station (Octagon House). Potentially significant in maritime history and commerce as well as for its rare and unusual style of architecture.

O'Shaughnessy Seawall. Potentially significant in the fields of engineering, city planning, and recreation as part of the long recreational history of Ocean Beach.

Ocean Terrace Site. A historic archeological site of a commercial district associated with Adolph Sutro's Lands End properties.

Sutro Baths. Archeological remains of a major public natatorium (building containing a swimming pool) constructed by Adolph Sutro in the 1890s and lasting until its destruction by fire in 1966. The site is a significant historic landmark in San Francisco and maintains key engineering features that facilitated its operation.

***Neptune* Shipwreck.** Remains of the shipwreck of the 1882-constructed schooner SS *Neptune* that wrecked on Ocean Beach near Fort Funston in 1900. Exposed by winter scour of beach sands in 1983.

San Mateo County

Phleger Estate. The Phleger Estate cultural landscape contains historic archeological sites relating to the area's logging history such as numerous skid roads, camps, and mill sites, as well as potential Ohlone archeological sites.

Rancho Corral de Tierra. The cultural landscape of Rancho Corral de Tierra may include structures, landscape features, and archeological sites associated with historic ranching operations dating back as far as the Mexican rancho era. These could include the site of the historically documented 1840s adobe residence of Francisco Guerrero y Palomares, original grantee of the northern part of Rancho Corral de Tierra; and the Martini Creek Ohlone sites: a district of precontact Ohlone sites north of Montara

Shelldance Nursery. Potentially significant as representative of the cut-flower industry in west San Mateo County.

Properties Ineligible for Listing in the National Register of Historic Places with Special Management

The state historic preservation office determined the Sutro Heights District at Point Lobos in San Francisco to be ineligible for listing in the National Register of Historic Places in 1979 and again in 2000, although the recently restored Cliff House and the remains of the water pumping system may be reassessed for eligibility as further information is developed. The district comprises approximately 78 acres and includes Cliff House, Sutro Heights, and Sutro Baths ruins. The park has chosen to manage the district and associated features, including the historic designed landscape, as a cultural resource.

ARCHEOLOGICAL RESOURCES

Definition

Archeological resources are the physical evidence of past human activity, including evidence of the effects of that activity on the environment. Information revealed through the study of archeological resources is critical to understanding and interpreting prehistory and history. Although archeological and ethnographic resources (which are covered in the following section) are considered as separate cultural resource types by the National Park Service—the two are closely interrelated.

Baseline archeological surveys, required under Executive Order 11593 and section 110 of the National Historic Preservation Act, have not been conducted for most of the original park lands or newly acquired lands. Currently, less than 7% of Golden Gate National Recreation Area has been surveyed for precontact and historic archeological sites. Only 2% (925 acres) of the lands considered for discussion in the general management plan have been surveyed. Of those sites inventoried, the significance of many of these sites requires further study and evaluation. Furthermore, comprehensive consultations with Coast Miwok and Ohlone tribes and descendants regarding archeological sites with ethnographic significance in the park will continue into the future. As a result of this need for additional survey, assessment, and consultation, archeological resources in the park are subject to deterioration from natural erosion processes, inadvertent but deleterious visitor, park management, or partner activities, vandalism, and looting.

On Alcatraz Island, some 81 areas of historic archeological interest have been identified through documentary research, including substantial buried resources worthy of

consideration for future incorporation into the visitor experience on the island. There is a clear need for a comprehensive archeological survey and evaluation of the island to incorporate contributing archeological properties and issues into both the national historic landmark documentation and the park's future planning. Consultation with American Indian tribes regarding ethnographic significance is also needed.

Resources

Currently, there are about 263 inventoried archeological sites in the park; 171 are within the area of potential effects for this planning study. Continuing research and expanding knowledge of the park's resources has resulted in a logical increase in known and expected archeological sites. Amendments to existing national historic landmark and national register property documentation with this new information has lagged. Archeological sites and related historic property types in the park and monument are associated with the following themes or topics:

- Precontact Period (prior to contact between indigenous and European peoples)
- Historic Spanish, Mexican, and American periods
- Military Reservations/Installations
- Seacoast Fortifications
- Ranching/Agriculture
- Logging
- Lighthouse/Life Saving Reservations
- Shipwrecks and Associated Remains
- Recreational Development

ETHNOGRAPHIC RESOURCES

Definition

Ethnographic resources include sites, structures, objects, landscapes, or natural resource features assigned traditional and contemporary legendary, religious, subsistence, or other significance in the cultural system of a group associated with them.

Traditional cultural properties are ethnographic resources eligible for listing in the National Register of Historic Places. Traditional cultural properties are associated with cultural practices, beliefs, the sense of purpose, or existence of a living community that is rooted in that community's history or is important in maintaining its cultural identity and development as an ethnically distinctive people.

Currently, there may be ethnographic resources within the boundaries of Golden Gate National Recreation Area, but they have not been formally evaluated. Research and consultation with affiliated tribes and descendants is still needed to clarify this issue. Alcatraz Island has great significance for American Indians—every Coast Miwok or Ohlone precontact site has significant heritage values to park-affiliated native people.

History

Native peoples have called the San Francisco Bay region home for more than 10,000 years, and the park still contains archeological sites and landscapes influenced by native land management and activities. Park areas south of the Golden Gate, from the San Francisco Peninsula to the East Bay and south to Monterey, are the aboriginal lands of the Ohlones (also called Costanoans). Park lands north of the Golden Gate, primarily in Marin County and southern Sonoma County, are the aboriginal lands of Coast Miwoks.

Both the Ohlone and Coast Miwok peoples were organized into small, politically independent societal groups or tribes; the Ohlones had about 50 tribes and the Coast Miwoks had approximately 14 tribes. Ethnohistory suggests that small villages were maintained along the marshlands. In San Francisco, villages were in the park at present-day Fort Mason, Crissy Field, and Point Lobos. In Marin County, the Coast Miwok encampments were in the Rodeo and Tennessee valleys and along Redwood Creek, and at Bolinas Lagoon. Groups moved annually between temporary and permanent village sites in a seasonal round of hunting, fishing, and gathering. Periodic burning of the landscape was conducted to promote the growth of native grasses for seed gathering and to create forage for deer and elk. The worldview and spirituality of both the Ohlones and Coast Miwoks were expressed in a complex woven tapestry of stories, myth, song, dance, and ritual.

In 1776, when Spanish military and civilian settlers arrived in the San Francisco Bay area to establish military garrisons (presidios), Franciscan missions, and civilian settlements (pueblos), life abruptly and dramatically changed for the region's native peoples. With Spanish colonization came the introduction of new diseases and the establishment of mission communities meant to supplant the existing tribal organization.

Because they lived close to the Presidio's military garrison, members of the Ohlone tribes that inhabited the San Francisco Peninsula, called the Yelamu, were baptized and taken into the missions as early as the 1770s and 1780s. Because the Coast Miwok tribes lived farther north, their indoctrination occurred somewhat later. In 1783, several members of the Huimen community, who inhabited the southernmost part of Marin County, were the first of the Coast Miwoks to leave their homeland for Mission, San Francisco. By 1810, introduced ideas, forced labor, and efforts to indoctrinate the indigenous peoples into an alien society and religion led to the destruction of the way of life of the Ohlones and Coast Miwoks.

Today, descendants of Ohlone and Coast Miwok peoples live throughout the San Francisco Bay area. Ohlones are organized into eight tribal bands, none of which are federally recognized, although several are seeking recognition. While participating in contemporary society, they are actively involved in the preservation and revitalization of their native culture. Restoration of native language, protection of ancestral sites, practice of traditional plant uses, story telling, dance, song, and basket weaving are all aspects of these restoration efforts. The National Park Service works with Ohlones in stewarding the preservation and interpretation of ancestral sites and landscapes in the Presidio and throughout the park south of the Golden Gate. Additionally, the National Park Service has a government-to-government relationship with the Coast Miwoks who today form a single, federally recognized tribe—the Federated Indians of Graton Rancheria—whose recognized status was restored by congressional legislation in 2000. If and when any of the Ohlone tribes receive federal recognition, the nature of the park's relationship with these tribes will become government-to-government.

Sites

Native peoples were severed from their homelands in the park for two centuries due to European and American colonialism, irreparably rupturing their traditional connections to place; this magnifies the significance of indigenous archeological sites as focal points of native heritage today.

Archeological sites related to indigenous peoples, such as the Point Lobos Archeological sites; the Muir Beach Archeological site; and sites at or near Tomales Bay, Olema Valley, Bolinas Lagoon, Redwood Creek, Tennessee Valley, Rodeo Lagoon, Angel Island, Fort Mason, Land's End, Crissy Field, Mori Point, Montara, and

Phleger Estate, constitute the most tangible connection between Coast Miwok and Ohlone peoples and park lands and provide a basis for understanding the history of their lifeways and cultures.

Collaboration

In the late 1990s—in equal measures due to evolving NPS policy and to the rekindling of California Indian tribal life—the National Park Service made its first efforts to reach out and work with the Coast Miwok and Ohlone communities. Since the late 1990s, the National Park Service has worked on a consistent basis with the Federated Indians of Graton Rancheria (the federally recognized tribe comprising park-associated Coast Miwoks and Southern Pomos), with the many Ohlone tribes seeking federal recognition, and with Ohlone individuals who partake in the stewardship of Ohlone heritage. Cooperative work has encompassed a broad range of park activities such as consultation on the identification, inventory, and treatment of cultural resources; collaboration on the interpretation of native history, genealogy, and culture; development of Indian-led educational programs; teacher training for American Indian curricula; permanent and temporary exhibits on native history and culture; annual commemorative festivals with native components; and the permitting of religious activities on park lands and gathering of natural materials for use in traditional crafts. Recent natural resource restoration projects involving the identification and preservation of archeological sites related to indigenous peoples (i.e., the Crissy Field tidal marsh and planned Big Lagoon restoration projects) have inspired an interest in exploring the re-creation of ethnographic landscapes as a value-added component of natural resource restoration.

Alcatraz Island

Although there are no formally evaluated ethnographic resources in Golden Gate National Recreation Area, Alcatraz Island has important historical significance to American Indians. After Alcatraz became part of Golden Gate National Recreation Area, each November the International Tribal Council conducted an annual "Unthanks-giving" sunrise ceremony on the island. The island was occupied by "Indians of All Tribes" from November 1969 to June 1971 as an internationally publicized protest to focus attention on the plight of American Indians and to assert the need for Indian unity and solidarity for achieving self-determination and securing political rights. Thus, the occupation increased awareness of the American Indian's political, economic, and social concerns and provided foundation for what would become a political movement—the American Indian Movement—to promote cultural pride and secure and protect Indian rights. The occupation resulted in the nation's increased awareness of American Indian concerns and issues and the establishment of D-Q University at Davis, California, as well as other institutions throughout the nation. Commemorations were held on the island to remember the 20th and 30th anniversaries of the Indian occupation. Tangible evidence of the occupation on the island includes painted political slogans and symbols on the buildings and physical alterations attributed to the Indians' activities. Since the occupation, the island has become a symbolic focal point of American Indian pride and solidarity among relocated American Indians in the San Francisco Bay area as well as the nation at large. Thus, the National Park Service recognizes the ethnographic significance of Alcatraz Island for American Indians and the island's potential for listing in the national register as a traditional cultural property.

PARK COLLECTIONS

Definition

Park collections are precontact and historic objects, artifacts, works of art, archival documents, and natural history specimens valuable for the information they provide about processes, events, and interactions among people and the environment.

Resources

U.S. Military history, from 1846 to the 1990s, is one of Golden Gate National Recreation Area's major themes. Much of the park land comprises former military fortifications and installations. The park's collections and its cultural and natural resource holdings are inextricably bound. The two largest collection types in the park are archives and archeology. The park has a collection of more than 4.2 million objects, including archeological and historical objects and archives, oral histories, maps, and historic documents and records, which are directly associated with the wealth of historic properties in the park. Of particular importance are the documents, maps, and engineering drawings relating to the layout, construction, development, and operation of the park's military sites and installations as well as its fortifications.

The park's collections consist of the following components:

- Archival collections (3.8 million) include subjects related to lands governed by the park covering the span of history from the mid-19th century through the present, and include all media types such as architectural drawings, maps, photographs, documents, books, and oral history recordings. Representative topics include Alcatraz and penal history in the Bay Area; Sutro Baths, Sutro Heights and Cliff House properties and history; military fortifications from the early 19th century forward; U.S. Army infantry, cavalry, and coastal artillery on the Presidio of San Francisco and at multiple other sites around the mouth of San Francisco Bay; Pacific Theatre of military operations originating in the San Francisco Bay Area; military life in the 19th and 20th centuries; historic structures and cultural landscapes; farming and ranching in the Marin Headlands; and Muir Woods and the early conservation movement. Archival collections support ongoing park management as well as diverse uses by both park staff and the public.
- History collections (19,757) include such things as original FBI evidence from the 1962 Alcatraz escape; original uniforms, accoutrements, and everyday objects from the U.S. Army; swimsuits and advertising materials from Sutro Baths; architectural features from historic structures; Nike Missile Launch Site collections; and California-related materials from the former Presidio Army Museum.
- Archeological collections (378,901) include formally and informally recovered precontact and historic artifacts derived from park lands and from specific sites listed in the NPS Archeological Sites Management Information System. These historic properties include two national historic landmarks (Presidio of San Francisco and Alcatraz Island), as well as many sites listed in or eligible for listing in the National Register of Historic Places.
- The natural history collection (2,030) includes a small herbarium, insect collection, and invertebrate specimens. The park's active inventory and monitoring program documents significant and endangered or threatened species collected from scientific research as well as paleontological specimens. While the

park only maintains a small collection, other Golden Gate National Recreation Area natural history specimens are maintained in other repositories in California and New York State. The purpose of natural history collections is to support scientific research, resource management, and education; provide baseline data of park resources; and document changes that these resources are undergoing because of internal park conditions and external effects. These collections preserve locally significant species collected in response to specific research or interpretation needs, and guarantee the protection of important specimens whose preservation cannot be assured. The natural history collection is divided into three disciplines: biology, geology, and paleontology.

Golden Gate National Recreation Area houses its park collections in 15 separate facilities throughout the park that function as visitor centers, interpretive exhibits, or dedicated storage areas. Of the four largest storage repositories, two are in buildings owned by the Presidio Trust with no lease agreements in place. The lack of a lease places park collections in a vulnerable position due to potential eviction and deteriorating structural conditions. There is a historic tie between the park's collection and that of San Francisco Maritime National Historical Park, which was part of the park until 1988. The themes and resources of the two parks are inextricably tied together. Under an agreement between the two parks, San Francisco Maritime National Historical Park continues to house and provide limited management of most of the non-Presidio materials in Building E of Lower Fort Mason, which is part of Golden Gate National Recreation Area.

The current conditions for park collections in the park do not meet NPS standards for long-term preservation, protection, and use of park collections. Staffing for the park collections has never been stable, thus precluding realistic access for researchers, the general public, and park staff. Although planning has been underway for some 15 years, a suitable site for the park's collections has yet to be finally determined.

CULTURAL RESOURCES: MUIR WOODS NATIONAL MONUMENT

INTRODUCTION

Muir Woods National Monument remains an enduring and renowned example of natural resource conservation in the United States. The redwood forest, long recognized for its significance as a natural resource, is also historically significant, along with its overlay of cultural resources, for its association with the history of the American conservation movement, early conservation efforts in the Bay Area, and the legacy of rustic design in the National Park Service.

Muir Woods National Monument is nationally significant as an early and lasting example of natural resource conservation by the federal government. The monument was designated on January 9, 1908, by President Theodore Roosevelt, who acted in large part on the advice and support of Gifford Pinchot, chief of the U.S. Forest Service. The creation of Muir Woods National Monument occurred at the beginning of the federal government's proactive role in conservation and preservation of natural and historic resources. Muir Woods National Monument was the tenth monument designated under the Antiquities Act of 1906, and the first designated through donation of private land—a gift from William and Elizabeth Thacher Kent. The proclamation of Muir Woods as a national monument helped spur conservation efforts elsewhere, notably protection of resources not under federal ownership. During the four decades following its establishment, Muir Woods National Monument—the first national monument in proximity to a major city—gained national and international renown as a place that expressed the ideals of American conservation. This perception culminated historically in a ceremony held on May 19, 1945, by the United Nations Conference on International Organization in memory of President Franklin D. Roosevelt. During the service in Cathedral Grove, speakers often referred to the spiritual quality of the site, thus attesting to the power of Muir Woods to function as a transcendent sacred space.

Muir Woods is also significant in the area of conservation for its association with early conservation achievements in the San Francisco Bay Area. It was the first public park established in an extensive conservation district that today extends along much of the western Marin Peninsula, directly across the Golden Gate from the city of San Francisco. This area is administered at the federal, state, and local levels by Golden Gate National Recreation Area, Mount Tamalpais State Park, Marin Municipal Water District, and Marin County Open Space District, an administrative structure that traces its origins back to the management structure William Kent established for Muir Woods and the adjoining lands under his ownership.

NATIONAL REGISTER OF HISTORIC PLACES

In 2008, a 425-acre Muir Woods National Monument Historic District was listed in the National Register of Historic Places. The historic district includes the 295 acres within the original national monument boundaries and additions of some 130 acres before 1940.

The district's historic buildings and structures were built during the first 32 years of Muir Woods National Monument's existence. In addition to the national monument's primary significance in the area of conservation, its buildings and major structures are also significant in the area of architecture. Dating from 1922 to 1940, the structures are representative examples of pre-World War II vernacular rustic architectural and engineering design in the National Park Service. The buildings were

designed by well-known NPS architects and landscape architects and built in part through New Deal-era federal work-relief programs including the Civilian Conservation Corps. They reflect the systemwide effort that advocated a high degree of craftsmanship and the use of native materials to help harmonize built features with the national monument's forested natural landscape.

The most visible building, the Administration-Concession Building (1940) constructed through federal work relief programs, remains the focal point of the entry area and retains overall massing and details that reflect the early development of the NPS modern style that became popular in the national park system after World War II. To the rear of the Administration-Concession Building is the utility area, which retains an intact collection of historic buildings, including the Superintendent's Residence (1922 with 1930s additions), garage (1931), and equipment shed (1934) that reflects the NPS rustic style with exposed timber framing details that were consistently employed on all monument buildings up until the late 1930s.

Historic structures, which comprise the principal elements of the cultural landscape in the historic district, include trails, bridges, roads, erosion-control structures, walls and stairs, and monuments. The cultural landscape of Muir Woods National Monument historically illustrated characteristics of the NPS rustic style through design of buildings, naturalistic design of trails and roads, use of natural stone for Redwood Creek revetments, and a pervasive log motif applied to footbridges, signs, gates, benches, and drinking fountains. Within the boundaries of Muir Woods National Monument Historic District is the heart of the old-growth redwood forest. This area includes Cathedral Grove and Bohemian Grove; main buildings and structures in the administrative and utility area that remain from the historic period; main trails and roads and their associated landscape structures that fan out from this headquarters to the northwest and south; and four monuments, one each to Ralph Waldo Emerson, Gifford Pinchot, Franklin D. Roosevelt, and William Kent.

The heart of the redwood forest on the canyon floor along the main trail retains much of the character it had during the latter part of the historic period. The forest retains its overall spatial organization formed by a corridor along Redwood Creek and the main trail, with secondary corridors along the side trails. Central focal points and nodal spaces within the forest remain Cathedral Grove and Bohemian Grove, with secondary nodal spaces at the entrance area / Administration-Concession Building and the utility area, all retaining much of their historic character.

The trail system is composed of the main trail (pre-1883) and its extension, Camp Alice Eastwood Trail (circa 1906); Ben Johnson Trail (circa 1904); Bohemian Grove Trail (circa 1905–07); Dipsea Trail (pre-1883); Fern Creek Trail (pre-1883); Hillside Trail (1908); and Ocean View Trail (1908). The Dipsea Trail, which extends from Mill Valley to Stinson Beach and runs through parts of Muir Woods, is the site of one of the oldest foot races in the nation. It was listed in the national register in 2010.

The main trail retains three bridges dating from the trails improvement by the Civilian Conservation Corps in 1934: most notably the Fern Creek Bridge, a stone-faced concrete-arch vehicular bridge, and two small wood stringer bridges over minor tributaries. There are also two log bridges remaining on the Ben Johnson Trail, probably built by the Civilian Conservation Corps between 1933 and 1937. With the exception of the three previously noted, most of the bridges on the canyon floor spanning Redwood Creek have been removed or replaced since 1947.

Roads in the historic district include a portion of the Dipsea Fire Road (possibly built by the Civilian Conservation Corps between 1934 and 1935) and the service drive, originally built in 1892 by the

Bohemian Club as Sequoia Valley Road and realigned in circa 1906. Between 1934 and 1938, the Civilian Conservation Corps constructed an extensive system of stone revetments along Redwood Creek, portions of which have collapsed or been removed. Additionally, a log dam (1932) was constructed near the Emerson monument. Historically significant monuments to Ralph Waldo Emerson (1903), Gifford Pinchot (1910), William Kent (1929), and Franklin D. Roosevelt (1947) retain their integrity.

Legislation to acquire the Camp Monte Vista Tract south of the monument's main entrance was approved in 1972. Intended to support park operations relocated from within the redwood forest, it contains Hillwood Camp and Druid Heights. Hillwood is the earliest surviving example in Marin County of a rural camp reflective of an effort to immerse urban-dwelling youth in a natural environment. The property includes the main lodge and associated features and is eligible for listing in the national register. Druid Heights is potentially eligible for listing in the national register as the site of a colony of artists, writers, and Zen philosophers (Alan Watts) influential in the development of the counter-culture of the 1960s.

ARCHEOLOGICAL RESOURCES

Although archeological sites were not comprehensively inventoried or evaluated as part of the study to nominate Muir Woods National Monument Historic District to the National Register of Historic Places, eight historic archeological sites have been identified in the historic district; all are associated with vestiges of early uses of the monument. Additionally, numerous precontact artifacts have been identified in the national monument suggesting pre-monument native occupation. A comprehensive archeological survey of the national monument and adjoining related lands is warranted to determine if there are resources of both precontact and historic significance. An archeological survey could provide information on issues not presently well documented, such as the area's use by American Indians; the exact sites of early buildings, structures, and landscape features that have been removed; the limits and use of the picnic areas; and construction and alignment of roads and trails.

ETHNOGRAPHIC RESOURCES

The National Park Service has not formally evaluated any ethnographic resources or traditional cultural properties within the national monument. However, an ethnographic survey and assessment needs to be conducted.

PARK COLLECTIONS

The park collections of Muir Woods National Monument are incorporated into the collections of Golden Gate National Recreation Area, and are discussed in that section of this document.

VISITOR USE AND EXPERIENCE: GOLDEN GATE NATIONAL RECREATION AREA

These are the places I go when…urban life becomes too stressful. To be able to walk in these beautiful places; to watch the birds, hang gliders, surfers, children at play, and fishermen is a balm to the soul.

—Golden Gate National Recreation Area visitor during public scoping

Golden Gate National Recreation Area lands, which stand in sharp contrast to the nearby metropolitan areas, span three Bay Area counties and afford visitors outstanding recreational opportunities. Residents and visitors alike value the "wilderness next door," an appropriate description for the park lands and waters that abut the highly developed areas of Marin, San Francisco, and San Mateo counties. Astounding scenic views, diverse recreational opportunities, and educational experiences coexist within Golden Gate National Recreation Area, making it a place for all ages.

DIVERSITY OF RECREATIONAL OPPORTUNITIES AND NATIONAL PARK EXPERIENCES

The unobstructed spaces preserved here are a dramatic contrast to the surrounding city environment. Visitors to the park have expressed enjoyment in the open space and clean air; quiet and solitude; and the ability to commune with nature, slow down, and relax. Activities such as walking along a quiet beach, discovering a deserted coastal fortification, and watching a hawk soar high overhead become spiritual experiences for many. These places, where city, nature, and history combine in breathtaking beauty, call deeply to the psyche of urban dwellers.

The spectacular setting of ocean, windswept coastal headlands, the bay, islands, and the iconic Golden Gate Bridge has afforded San Francisco international recognition as one of the world's most beautiful cities. The Golden Gate National Recreation Area serves as the panoramic backdrop to the Bay Area. Some of the most scenic views in the region are of the ocean and bay from lands within the park. Views of the Golden Gate Bridge, Alcatraz Island, and the Marin Headlands from sites in San Francisco have been captured in countless photographs. The Marin Headlands offer dramatic views of San Francisco Bay and the city of San Francisco. Another important viewshed in the park is Marin County park lands in the darkness. These lands are undeveloped; from San Francisco, they appear truly dark and wild, especially in comparison to the city lights on the peninsula. During scoping for this plan, the public expressed significant appreciation for the scenic qualities of the park and concern about long-term protection of the park's scenic integrity.

Viewing nature is another popular activity for visitors. Raptors can be spotted from the Marin Headlands and shorebirds can be viewed along beaches. The park has an abundance of protected land populated with 1,200 plant and animal species. The area has been designated the Golden Gate Biosphere Reserve due to the diversity of its natural habitat. Visitors have strongly expressed a belief that the unique fauna and flora should be protected.

Learning about the area's history is also an important part of the visitor experience at the park. Military coastal defense sites are a major reason the park is preserved today. Signs of U.S. military history are scattered throughout the park lands. Forts Baker, Barry, and Cronkhite, and the fortifications along Presidio Bluffs offer interpretation of

the structures and strategies used to defend the Bay Area. Other interpretive exhibits and programs offered by both park staff and park partners give visitors an opportunity to learn about the diverse and extensive history of the area.

Beaches play an important role in recreational activities available to visitors in the park. Over 25% of surveyed visitors to the park lands in southern Marin County went to the beach (Godbe Research and Analysis 2002). Stinson, Rodeo, Tennessee Valley, and Muir beaches in Marin County and Ocean Beach, Fort Funston, and China Beach in the city of San Francisco provide places for visitors to walk, jog, sunbathe, swim, surf, fish, play volleyball, and picnic. Visitation to these areas is highly weather dependent; heaviest use occurs during the summer months (Godbe Research and Analysis 2002).

Trails are a significant part of the park. Trails provide access so people can connect to the area's natural and historic treasures. With 196 miles of trails that range from paved surfaces to single-track paths, much of Golden Gate National Recreation Area is a paradise for walkers and hikers. Multiuse trails also serve mountain bikers and equestrians. Scenic touring on both roads and trails, including viewing scenery from overlooks reached by foot or vehicle, is a related and important visitor opportunity.

The public has expressed strong support for the diversity of trail opportunities provided in the park. They also noted how much they enjoy the diversity of natural landscapes, historic sites, wildlife, and native plants that are visible along the trails. Some visitors, however, are concerned about conflicts between some trail uses, particularly safety concerns between bicyclists and equestrians. In addition, some of the public is concerned that certain trail activities, such as dog walking, horseback riding, and mountain biking, might be more restricted in the future. A desire to increase the number of trails that meet the Americans with Disabilities Act of 1990 (ADA) requirements was also mentioned during scoping for this plan.

Overnight lodging facilities exist within the park provided by both the National Park Service and partners, including hostels at Fort Mason, Montara Lighthouse, and the Marin Headlands, and camping areas in Marin County. Overnight accommodations allow visitors to explore a trail or area more extensively than would be possible in a day trip. Overnight areas can also serve as hubs for activities, such as at Fort Mason, where visitors can explore the park and its setting from a convenient location. Camping overnight is an important experience in itself. It is an experience most often associated with more distant national parks, but made available to local populations. It also provides appreciation of the night sky and natural sounds that cannot be appreciated during other times.

The park and partner programs offer many opportunities to get involved in stewardship of the park. In 2008, the National Park Service, Presidio Trust, and Golden Gate National Parks Conservancy team brought thousands of volunteers to the park for activities such as trail building, habitat restoration and conservation, and organized youth programs. In 2008, community volunteerism yielded over 300,000 hours of service to the park. Stewardship activities bring in thousands of school-aged children to the park, allowing all who participate to forge a deeper connection with park lands and the resources within those lands. Environmental education programs exist through partners at several sites, including Slide Ranch and Fort Cronkhite. These mutually beneficial relationships between the park, its partners, and park visitors, allow park lands to thrive at a level much higher than could be accomplished through federal funding alone.

VISITOR OPPORTUNITIES AT ALCATRAZ ISLAND

Alcatraz Island is a highly visible landmark in San Francisco Bay and is a major visitor attraction within Golden Gate National Recreation Area, with a significant demand for visitation. Although it has been used for a variety of purposes over the years, it is best known for its service as a federal prison from 1934 to 1963. The island was opened to the public in 1973 and has become a popular tourist destination. The National Park Service and its partners offer visitors extensive interpretation of the federal penitentiary period of the island, as well as the military prison and American Indian self-determination movement. In addition, the ferry trip to the island and many locations on the island itself offer great scenic viewing of the Golden Gate Bridge, the Pacific Ocean, San Francisco Bay, the city of San Francisco, and the Marin Headlands. Further, learning about the island's role in the ecological system of the bay, including its contribution as important bird habitat, is another highlight of a visit to the island. Alcatraz Island also offers overnight experiences a few times a year through special organized events that typically involve the use of volunteers.

VISITOR USE AND CHARACTERISTICS

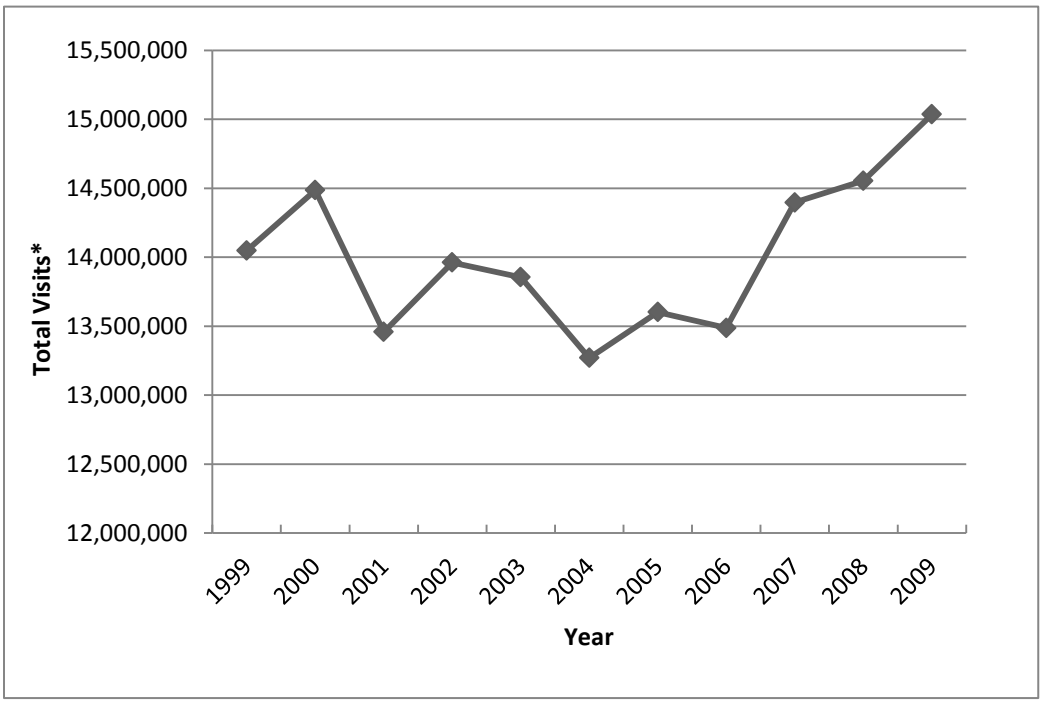
Golden Gate National Recreation Area lands and waters serve many millions of visitors a year, making Golden Gate National Recreation Area one of the largest urban parks in the world. Extending 80 miles from north to south, the various sites of Golden Gate National Recreation Area form an expansive public green space for both the local urban population and tourists to enjoy.

In 1972, the first year that Golden Gate National Recreation Area was established, the park had over 42,000 visitors. There have been substantial increases and a few intermittent decreases since then, but annual visitation has remained around 14 million visitors over the last 10 years (see figure 4) (NPS 2009d).

Golden Gate National Recreation Area receives about 5% of the total visitation to national parks across the nation, ranking it as the second-most visited park in the national park system (NPS 2009d). Many of the sites within Golden Gate National Recreation Area are in the "backyard" of Bay Area residents who use park lands for recreation and exercise. At many of the park sites, visitors from the local area account for the majority of visitors. Other sites, such as Alcatraz Island and the park lands of the Marin Headlands, are major tourist destinations, receiving visitors from across the nation and around the world. Visitor use levels remain relatively stable to Golden Gate National Recreation Area throughout the year, given the area's temperate climate and year-round attractions and support services. However, the park does experience higher visitation in the spring and summer and on holidays (NPS 2009d). See figure 5.

The National Park Service and others have conducted numerous visitor studies in Golden Gate National Recreation Area in order to provide greater insight into the current visitor profile in terms of demographics, trip characteristics, and preferences. Although visitor populations to the various sites within the park often vary substantially—there are several specific characteristics that the majority of park visitors share.

The collection of surveys and studies of park visitors reveal that most arrive in personal vehicles (Sheffield 2008). Visitors most often come alone or in small groups of up to four people. Day users are coming to the park to sightsee, hike, walk, spend time with friends and family, escape, find respite, enjoy nature, and participate in events. A large majority of visitors come from the local area and enjoy the undeveloped open space that is nearby



*Visitation counts are estimates that include some areas outside the planning area, but within the park boundary, i.e., Crissy Field

FIGURE 4. GOLDEN GATE NATIONAL RECREATION AREA RECREATIONAL VISITORS BY YEAR 1999–2009

and easily accessible. For instance, it was found in a recent study of visitors to park lands in San Mateo County that a majority of visitors live close to the park—some within 2 miles—and use the park on a regular basis (Manning 2007). However, at some specific sites, such as Alcatraz Island, studies indicate a much greater mix of local and out-of-town visitors (Sheffield 2008).

Several visitor surveys of trail users have been completed at Golden Gate National Recreation Area. The surveys found that trail users come primarily for exercise, rest, and relaxation, as well as to spend time with friends and family (Sheffield 2008). Some of the areas surveyed include Point Bonita and the Marin Headlands (2006), Land's End (2005 and 2007), and Mori Point and Sweeney Ridge (2004). Trails are used by both local and out-of-town visitors, although many users are frequent visitors; up to 75% to 85% are return visitors. Trail users are generally split evenly between men and women and are generally between the ages of 20 and 55, well-educated, and coming to trails alone or in pairs (Sheffield 2008).

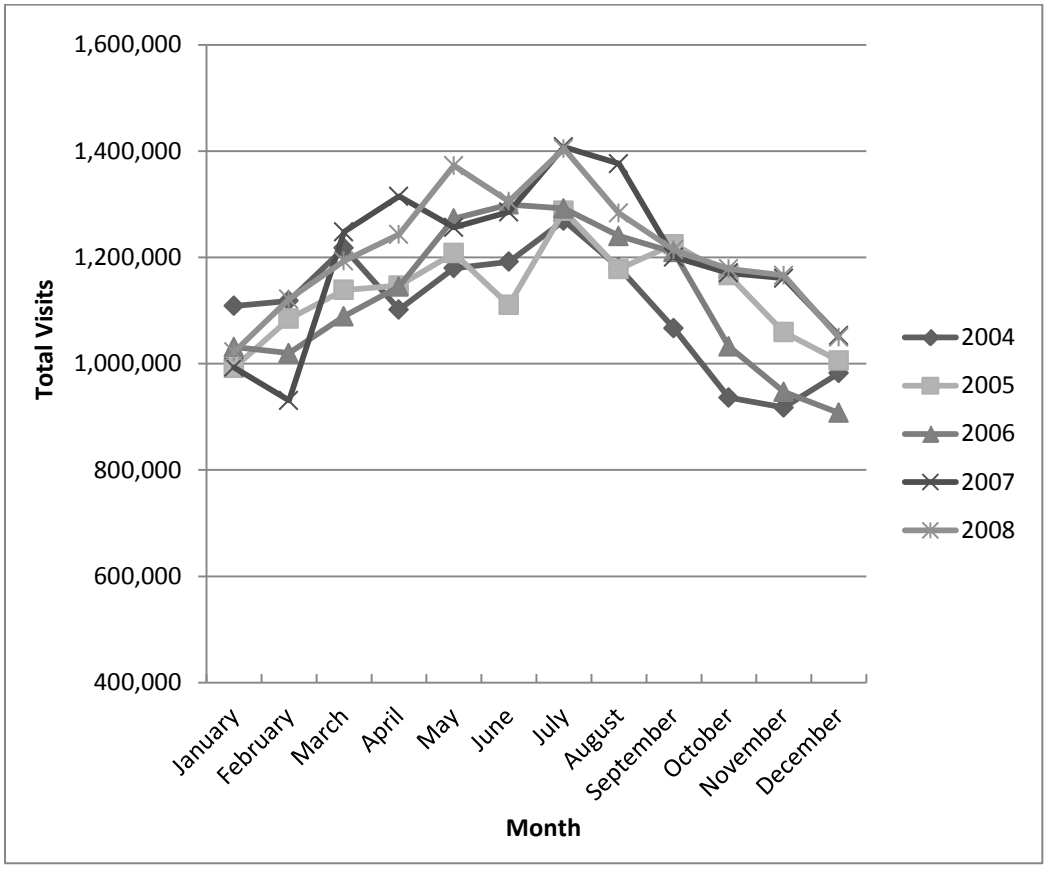


FIGURE 5. GOLDEN GATE NATIONAL RECREATION AREA VISITOR USE BY MONTH 2004–2008

Visitors to Alcatraz Island

Over 1.4 million visitors tour Alcatraz Island each year; this number has been holding fairly steady over the recent past (NPS 2009d). On peak use days, up to 4,400 visitors travel to the island and up to 5,000 visitors travel there on days when evening programs are offered.

Several visitor studies, conducted since 1988, reveal that Alcatraz Island has a distinct visitor profile compared to the rest of Golden Gate National Recreation Area. The island gets far more first time visitors than does the rest of the park. It also gets a larger percentage of nonlocal and international visitors. Over 70% of visitors surveyed stayed between two and three hours on the island (Manning et al. 2007).

Characteristics of Infrequent and Nonusers

Many of the diverse groups living in the San Francisco Bay Area have not traditionally been park visitors. However, some of the factors that have served to keep them from the park have recently been studied. Some of these barriers include lack of public transportation, language differences, lack of access to information, equipment costs, and lack of time. Other barriers include a minimal representation of ethnicity and race in the park staff and perceived intolerance. Lack of knowledge, experience, and awareness of where to go, what to do, and the skills needed to partake in activities were additional factors in not visiting (Roberts 2007; Winter, Jeong, and Godbey 2004).

Although some of these groups visit the park infrequently, their interests for park visits are much the same as those of more frequent visitors. In Roberts's study (2007) of ethnic minorities and visitation constraints, participants expressed a range of preferences for recreational activities (indoor and outdoor). All groups in the study expressed a clear desire to enjoy the numerous benefits associated with outdoor recreation, along with an interest in education about national parks. Cultural connections to nature and the natural environment ranged from mental and physical benefits to spiritual and religious gains in personal life. Participants identified the benefits of parks in relation to nature being healthy, with a typical emphasis on mental health (parks as reducing stress or strains of everyday life) and in reference to increasing their connection to "God or spirituality" (Roberts 2007).

VISITOR UNDERSTANDING, EDUCATION, AND INTERPRETATION

Golden Gate National Recreation Area offers unique and varied experiences to visitors through the interpretation, education, and stewardship programs offered by the park and park partners. Interpretation is delivered through a variety of media and at a variety of locations. Opportunities to learn range from self-guided to formal educational programs, and these opportunities appeal to a variety of people and learning styles.

Participation in interpretation programs helps visitors to form their own intellectual and emotional connections with the meanings and significance of park resources. The park interprets its resources by several methods, including visitor center exhibits, audio tours at Alcatraz Island, ranger talks, educational brochures, and interpretive signs. Visitor and park information centers are in Fort Mason, Marin Headlands, Pacifica, and Crissy Field. According to the 2008 *Golden Gate National Recreation Area Visitor Survey Card Data Report*, the park is meeting visitor needs, and excelling in categories such as visitor centers and sightseeing facilities (NPS 2008a). It was frequently noted during this planning process that the public places a high value on the educational and stewardship programs offered at the park and would like to see those opportunities maintained and even expanded. The public expressed specific interest in having more signs, maps, and interpretive programs available. Another request was for more opportunities to learn about American Indian history related to the park.

Partners of Golden Gate National Recreation Area are vital to the success of park efforts at promoting visitor understanding, education, and interpretation. A wide range of enthusiastic and committed partners operate within the park lands, offering visitor opportunities such as environmental education, art appreciation, children's programs, equestrian programs, marine mammal conservation, agricultural education, and conservation of the parks. Partners operate park bookstores, hostels, and other facilities that offer visitor-related services on park lands, thus enhancing and deepening visitor experience and creating a community of park stewards. Partners also fund interpretation and volunteer efforts, as well as capital construction projects such as rehabilitation of historic structures for visitor programs. Their advocacy is integral to engaging people in the parks and facilitating visitor understanding of park history and resources.

SAFE AND ENJOYABLE ACCESS AND CIRCULATION TO AND WITHIN THE PARK (SEE ALSO TRANSPORTATION SECTION)

Safe and enjoyable transportation to and within park lands is important to the visitor experience at Golden Gate National Recreation Area. The many roads, trails, and overlooks throughout the park provide scenic viewing opportunities for visitors. There are also many transportation options

for connecting visitors to park sites, including auto, bicycle, and public transit.

Further, within Golden Gate National Recreation Area are miles of trails, making it possible for hikers, bikers, and equestrians to travel great distances through park lands. The Trails Forever Program was launched in 2003 to build a world-class system of trails, which has been vital to the improvement of trails within Golden Gate National Recreation Area. Public scoping comments sometimes focused on the need for trail design improvements to make the trails safer, and the need for loop trails. Trails in all areas of the park lands could be improved to connect to neighborhoods, nearby public lands, and the regional trail network.

Currently, the majority of visitors, especially those from outside San Francisco, arrive by personal vehicle. This sometimes causes congestion problems along roadways, in parking areas, and in nearby neighborhoods. Public transportation connections to the park are limited outside of San Francisco, so the large population of regional residents without personal vehicles cannot easily travel to the park. Although there is an extensive public transportation system that serves the city of San Francisco, some connections stop short of the park, or serve the park only on weekends and holidays. Further, there are some portions of park roads that have limited options for bicycle access. The limitations with the public transit system and bicycle access are being addressed as part of a systemwide strategic planning effort.

The ferry pier to Alcatraz Island is accessible by public transportation. However, once on the island, visitors must walk up steep roads to get to the cell house and other attractions. There is a tram available for visitors who need assistance, but the road is narrow and steep, with few turn around points or turnout areas. Although very few incidents have occurred, conflicts between visitors and vehicles are a concern to park staff.

The "Transportation" section of this document goes into more detail about the intricacies of the transportation environment to and within Golden Gate National Recreation Area.

VISITOR SAFETY

Golden Gate National Recreation Area experiences safety issues similar to those found in any national park and also faces additional visitor safety challenges due to its urban location. The park staff make considerable effort to provide safety information in easily accessible places and formats. However, there are many points of entry to the park, and visitors are sometimes unaware and unprepared for dangers.

Urban challenges include criminal activity, crowding, and congestion that affect the ability of law enforcement to respond in a timely manner. Additionally, as visitors to the park are moving from urban areas to undeveloped open space, they may fail to bring adequate food and water, become lost in unknown areas, or get into a situation too difficult for their skill or experience level. The Point Bonita and Marin Headlands visitor survey identified a lack of trail signs that makes it difficult to stay on the correct trail (Tierney 2007). At Mori Point and Sweeney Ridge, visitors identified the lack of helpful information about the area as a concern (Tierney 2004).

The physical features of the land and the natural habitat can also pose safety risks. The park encompasses ocean and bay waters, which have associated dangers. At ocean beaches, rip tides are common and can be dangerous for swimmers. Visitor risks are associated with steep and crumbling cliffs.

Conflicts between users can also pose safety problems such as those between vehicles and pedestrians, or between equestrians and bicyclists. During public scoping, people expressed concern that some trails were not

designed appropriately or managed to help users avoid conflicts.

Road safety is also a component of visitor safety. Access to and from State Route 1 poses a problem at several points in Golden Gate National Recreation Area such as at Montara Lighthouse and Shelldance Nursery in San Mateo County. In some areas, closed or unmaintained facilities may pose risks to visitors who explore them and require area closures. In particular, Alcatraz Island has a number of buildings in very poor condition that can pose safety hazards to visitors.

VISITOR USE AND EXPERIENCE: MUIR WOODS NATIONAL MONUMENT

Time stands still in Muir Woods.

—Visitor to Muir Woods

Surrounded by the tallest living tree species in the world, visitors to Muir Woods experience a majestic and awe-inspiring setting. These majestic giants, in combination with Redwood Creek, cannot help but awe visitors and take them to a more serene place and time. The monument offers a quiet sanctuary in a growing urban setting. Conservationist John Muir summed it up best when he said "this is the best tree-lovers monument that could possibly be found in all the forests of the world."

DIVERSITY OF RECREATIONAL OPPORTUNITIES AND NATIONAL PARK EXPERIENCES

Muir Woods National Monument offers outstanding opportunities to walk and hike among the giant redwoods. There are 6 miles of trails within the monument, including three loop trails. One and a half miles of trail are paved surface or boardwalk, thus providing greater access to the forest for visitors of all abilities. Other more challenging trails extend out of the monument and connect to nearby public lands such as Mount Tamalpais State Park and Muir Beach. Opportunities for visitors include self-guided walking tours, ranger-led talks and tours, volunteer activities, and educational and restoration programs.

In visitor surveys at the monument, people identified the trees, beauty, peacefulness, trails, and other aspects of the natural surrounding as the features they most enjoyed. One visitor commented on the special ability to commune with nature while at the monument. Some visitors expressed their dislike for the crowds, noise from groups, lack of parking, and closed trails. Crowding issues primarily occur at peak times in the monument, especially on weekends and holidays in the summer. While most visitors had no suggestions for improvement, some visitors mentioned that more information and interpretation, more trails, and more parking would be appreciated (Manning et al. n.d.).

The natural soundscape at Muir Woods National Monument is a highly valued part of visitor experience. Some members of the public complained about the noise from other visitors, particularly noise from large groups. The monument has recently implemented "quiet days" and "quiet zones" to encourage visitors to voluntarily modify their behavior to enhance the contemplative feeling of the monument's natural setting.

VISITOR USE AND CHARACTERISTICS

While annual visitation to Muir Woods National Monument peaked in the late 1990s, it has since stabilized over the last 10 years at around 750,000 (figure 6). Monthly visitation varies significantly, with the summer months attracting the highest number of visitors. This is likely due to the greater numbers of out-of-town visitors who often travel during the summer (figure 7) (NPS 2009d). Local residents may also visit Muir Woods more often in the summer when children are out of school.

Muir Woods National Monument, like Alcatraz Island, has been the focus of many visitor surveys. Studies conducted between 2003 and 2005 provide good demographic information on visitors (Manning et al. n.d.). For example, 72% of visiting groups are families with the majority of groups consisting of two to four people. Over half of

the survey respondents were first-time visitors, suggesting that Muir Woods is an important urban gateway to the national park experience. Ninety-two percent of visitors were from the United States, with almost 40% of domestic visitors residing in California. The educational attainment of visitors was very high; about 80% of all visitors had a post-secondary degree. Most visitors were there for less than four hours (Manning et al. n.d.).

VISITOR UNDERSTANDING, EDUCATION, AND INTERPRETATION

The stories of Muir Woods are many: the ecology of the watershed, the natural history of the redwood forest, the history of the conservation movement, and the establishment of the biosphere reserve. There are various ways in which visitors can experience this information: (1) at the visitor center with exhibits and books and brochures; (2) on a self-guided walk; (3) by attending ranger talks, tours, or evening programs; and (4) by attending a junior ranger program. In addition, monument staff collaborate with many local organizations that offer learning and educational programs, thus expanding the interpretive and educational offerings available to visitors.

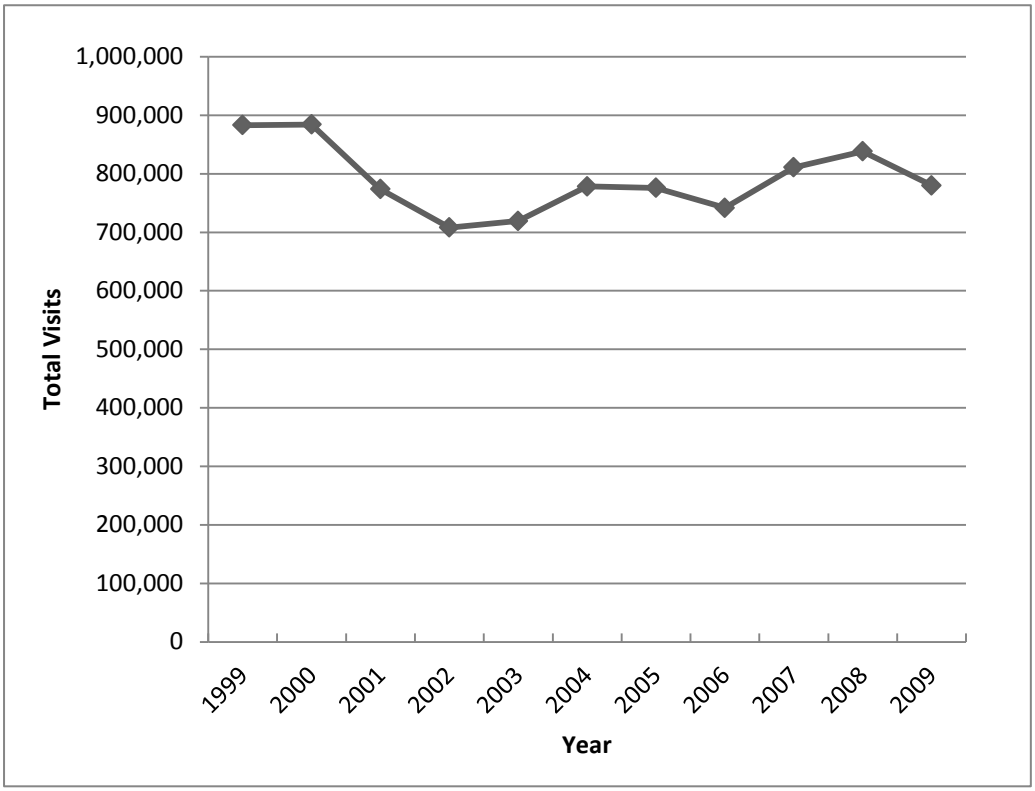


FIGURE 6. MUIR WOODS NATIONAL MONUMENT RECREATION VISITORS BY YEAR,1999–2009

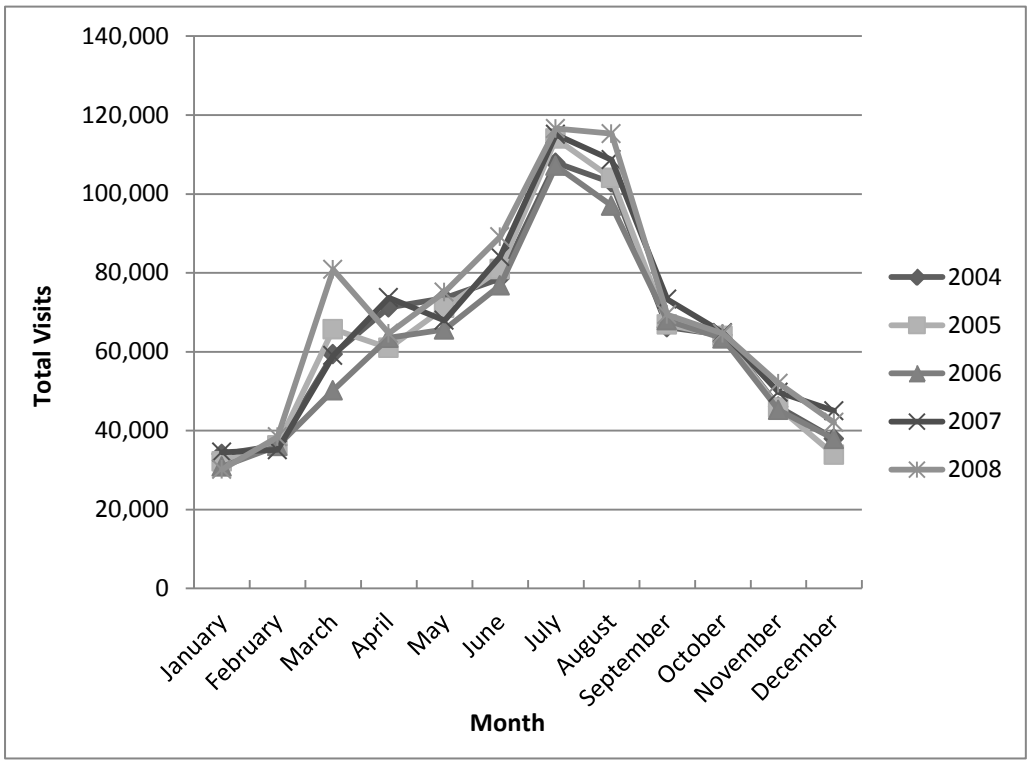


FIGURE 7. MUIR WOODS NATIONAL MONUMENT VISITOR USE BY MONTH, 2004–2008

In public scoping for this plan, some people commented that they particularly appreciate the messages associated with the preservation values of the monument and its connection to conservation history. A few others noted that additional information and signage at Muir Woods National Monument would be desirable to enhance knowledge about the ecosystem processes.

SAFE AND ENJOYABLE ACCESS AND CIRCULATION TO AND WITHIN THE PARK (SEE ALSO TRANSPORTATION SECTION)

For many visitors, traveling to Muir Woods National Monument at peak times can be a frustrating experience. The parking lot fills up quickly and often people resort to parking along the road. For example, during the 2003 visitor study, researchers found that 92% of visitors arrived by car, and of those, 76% were able to park in parking lots, with the remainder having to park along the road (Manning et al. n.d.).

It is likely that some visitors who drove to the monument may have left when faced with no easily accessible parking options. Public transportation via shuttle is now available on weekends and holidays in the summer, but at other times there is no public transportation service to the monument. The shuttle system, implemented in 2004 to help ease the parking limitations at the monument, has improved access for visitors. Once within the monument, visitor access is by walking and hiking on trails. The monument has three loop trails, and 1.5 miles of accessible paved or boardwalk trail. There is also trail access from nearby public lands, including Mount Tamalpais State Park.

VISITOR SAFETY

A safety concern mentioned by members of the public relates to access to the monument. The road to Muir Woods National Monument is narrow, winding, and steep in places. Comments indicated that larger vehicles do not always stay in their lanes on the curves, causing danger to oncoming traffic, including other vehicles and bicyclists. In addition, roadside parking at the monument results in real and perceived safety dangers for visitors who must traverse the road to gain access to the monument's entrance.

SOCIAL AND ECONOMIC ENVIRONMENT (INCLUDING BOTH GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT)

INTRODUCTION

The social and economic conditions of the Bay Area and the gateway counties of Marin, San Francisco, and San Mateo influence Golden Gate National Recreation Area and Muir Woods National Monument and how they are managed. Conversely, the park and monument directly contribute to the social and economic conditions of these three counties and the Bay Area as a whole. This section describes the existing conditions related to this relationship by highlighting the park's quality of life benefits as well as the Bay Area's demographic and economic trends.

The San Francisco Bay Area is not only one of the most diverse metropolitan areas in the United States, it also has a unique culture and community ethic that distinguishes itself from most other American urban centers. Generally speaking, the Bay Area's cultural identity exhibits an intrinsic sense of awareness, stewardship, and activism toward social and environmental issues.

This section summarizes the existing social and economic conditions in the Bay Area, as well as in the three counties most affected by Golden Gate National Recreation Area and Muir Woods National Monument (Marin, San Francisco, and San Mateo). The section also includes projections of how some of these conditions may change over the next 20 years, which is the planning horizon of the park's general management plan. To maintain consistency with regional demographic analyses, the term "Bay Area" in this section will refer to the nine-county region defined by the Association of Bay Area Governments. The nine counties of the Bay Area are Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma.

THE IMPORTANCE OF PARKS TO A COMMUNITY

Park and open space areas in and around an urban area are key contributors to the quality of life in the community. This becomes even more significant in very large metropolitan areas where population densities and the travel distance to public lands are greater. The San Francisco Bay Area is the fifth-largest metropolitan area in the United States. Thus, the park and monument play a vital role in sustaining and enhancing the quality of life for the residents of the Bay Area. The significance of this role becomes more evident when we consider the following four specific ways parks and open space contribute to quality of life.

"Woven into the Fabric" of the Bay Area

In a literal sense, the size, geographic orientation, and location of Golden Gate National Recreation Area within the Bay Area make the park a large physical component of this metropolitan area. The public lands of Golden Gate National Recreation Area serve as a natural and scenic backdrop to the urban landscape of the Bay Area by day and an open expanse of darkness by night. In addition, the park's close proximity to the urban centers of the Bay Area elevates its importance. However, equally important and in a more figurative sense, Golden Gate National Recreation Area is "woven into the fabric" of the Bay Area community. The park is part of the community and the community's identity.

The themes and aesthetics of the various park components help feed the conservation ethic of the Bay Area community. In turn, this community ethic fuels the residents' valuation and appreciation of the park and its intrinsic natural and cultural resources. This cyclical dynamic helps strengthen the bond between the community and the park and helps sustain a heightened quality of life for community residents.

Community Building

On a related but distinct note, Golden Gate National Recreation Area helps instill a sense of community in the Bay Area. This community-building effect occurs on two primary levels. First, the many diverse park resources and features help provide a sense of community identity for Bay Area residents. Many of the landmarks, natural wonders, and amenities of the park are not only known on a local or state level, but also admired at a national and international level. For example, many people around the United States and throughout the world identify with the Bay Area by thinking of the coastal redwoods of Muir Woods National Monument, historic sites such as Alcatraz Island, or even the idyllic views of open lands and water around San Francisco Bay. This local and global admiration contributes to a sense of identity and pride in being a resident of the Bay Area community. Just as residents may identify with the community via its cultural diversity, culinary quality, free spirit, or even 49ers or Raiders, they also find a sense of identity with the many attractions of Golden Gate National Recreation Area.

Secondly, Golden Gate National Recreation Area contributes to community building by providing numerous park sites and open lands for the diverse residents of the Bay Area to congregate and socialize. Parks are one of the most effective ways to build a sense of community and enhance quality of life by providing common places for people to interact in a shared environment (Francis 2006). Urban parks are one of the few public places where people of diverse cultures, ethnicities, ages, and lifestyles can congregate and communicate openly in a community.

Health Benefits for Bay Area Residents

In addition to community benefits, Golden Gate National Recreation Area also helps enhance the Bay Area quality of life by improving the psychological and physiological health of the Bay Area residents. A recent report by California State Parks indicates that, "Two-thirds of Californians consider outdoor recreation important to their quality of life" (California State Parks 2005).

An urban interface park such as Golden Gate National Recreation Area can help improve the community's health by offering residents opportunities for personal fitness, active recreation, and other physical exercise. A 2001 Center for Disease Control (CDC) task force report indicated that regular physical activity correlates with a prolonged life expectancy and enhanced health, including a reduced risk for cardiovascular disease, obesity, diabetes, some cancers, and musculoskeletal conditions. The report also notes that only 25% of U.S. adults report engaging in adequate physical activity. As a result of this shortfall, the CDC task force "strongly recommended" that communities improve access to places that offer physical activity (e.g., hiking and biking trails, parks) (CDC 2001). In turn, evidence shows that when people have access to parks, they tend to exercise more. Research also indicates that contact with the natural world improves physical and psychological health (Sherer 2006). Golden Gate National Recreation Area helps satisfy these essential community needs in the Bay Area.

In terms of psychological or mental health benefits, regular physical activity can reduce the severity of many mental health disorders, alleviate depression, and decrease stress and anxiety (California State Parks 2005). Furthermore, even if a park visitor opts for a

less-active, more relaxing park experience, an urban park such as Golden Gate National Recreation Area can provide an open and free feeling that helps offset the more congested feeling that can be generated by high-density urban living.

The park also contributes several other community health benefits for Bay Area residents. For example, the numerous attractions and open areas of the park offer a place for children to stay active, safe, and socially engaged. A community that offers a healthy environment for children reaps numerous social benefits in the short and long term, as the kids have ample opportunities to learn, socialize, exercise, and get "hands-on" exposure to the natural world. During the comment period for the preliminary alternatives for this plan, many children submitted letters that expressed the importance of various park features to them. Comments such as "It teaches kids how to love nature" and "kids learn and discover lots of cool stuff" were plentiful.

The Increasing Value of Golden Gate National Recreation Area

A fourth contributor to the Bay Area's quality of life relates to how the community value of park open spaces increases over time as population growth and urban sprawl continue in the region. As of 2007, the Bay Area had a population of roughly 7 million. By 2035, the Association of Bay Area Governments projects that the population of this nine-county region will grow by 2 million people (ABAG 2007). With this population growth on the horizon, housing production will need to increase as well. In recent decades, a significant amount of Bay Area housing growth has occurred along the fringes of the Bay Area to accommodate population growth. This fringe development resulted in an expanded urban area and a decrease in open and agricultural land in the Bay Area. This trend will likely continue over the next 20 years, along with additional infill development in existing urban areas. As a result, the anticipated population and housing growth in the future will displace a significant volume of land that is currently open, undeveloped, or agricultural. Moreover, with every acre of open land that is displaced by urban development, the community value of every acre of existing park land will increase.

This "increasing park value" dynamic has other implications that need to be considered in park planning. As Golden Gate National Recreation Area lands become more and more important (and unique) as urban growth continues, pressure will likely mount to allow more intense and nontraditional uses on these park lands. With higher population densities and less available open land in the Bay Area, both public and private interests may petition for uses such as municipal infrastructure corridors, public parking, or as places for more active and consumptive recreational uses. So, just as park lands may become more precious to the community, they also may become more at risk from demands other than the demand for preservation of open space.

POPULATION AND COMMUNITY TRENDS

The current and future management of the park and monument is directly affected by the population dynamics and composition of the communities that surround it. With the majority of visitors being Bay Area residents, the visitation and involvement from the local Bay Area communities play an integral role in sustaining the park. As the population grows, there will be an increase in visitor use and demands for the park to accommodate traditional and new outdoor recreation opportunities.

General Description of Overall Bay Area Community

The nine-county Bay Area is generally centered on San Francisco Bay. The urban

lands of the Bay Area include 101 cities, with three primary urban centers (San Francisco, Oakland, and San Jose). About half of the projected population increase in the Bay Area over this planning horizon is due to the difference between the number of births and deaths; the other half is due to expected migration into the area as a result of abundant employment opportunities (ABAG 2008).

The Population… by the Numbers

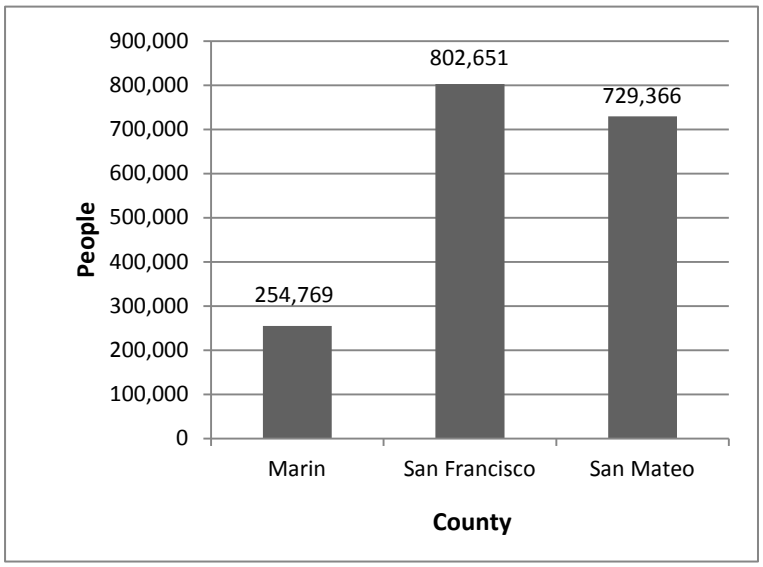
The Bay Area population grew steadily from 2,681,332 in 1950 to 6,783,760 in 2000 (U.S. Census Bureau 2009). As of 2006, the Bay Area population estimate was 7,167,500. Over the next 20 years, the region's population will continue to grow to a projected 8,709,000 people by 2030. Although the projected population growth is significant, the growth will not be distributed evenly throughout the Bay Area's nine counties. The vast majority of the growth (both numerically and by percentage) will be occurring in the eastern counties, such as Alameda, Contra Costa, Santa Clara, and Solano counties, where more developable land exists. This substantial population growth in the fringe areas of the Bay Area will contribute to future increases in park visitation. Also, given the longer travel distance and more limited transportation options from these eastern areas to the park, shifts may occur in visitor use patterns (e.g., duration of stay, preferred park destinations, number of vehicles in park).

Although most population growth is forecast for these eastern fringe counties, a modest level of infill population growth is also expected in the park's gateway counties of Marin, San Francisco, and San Mateo (see following two figures). Given San Francisco's larger population on its relatively small land area of the peninsula, San Francisco's population density is over 30 times greater than the Bay Area average.

Cumulatively, the three gateway counties will account for about 8% of the projected population growth in the overall Bay Area by 2030. As displayed in the following figure, the three counties of Marin, San Francisco, and San Mateo will become an increasingly smaller component of the overall Bay Area population, given the west-to-east shift in future population growth. In 1970, these three counties accounted for roughly one-third of the total Bay Area population. Over the next few decades, Marin, San Francisco, and San Mateo will account for only about one-fifth of the Bay Area population. Despite having access to other local and regional parks closer to home, it is likely that people in these more distant communities of the Bay Area will still seek the unique and distinct experiences provided at the park and monument.

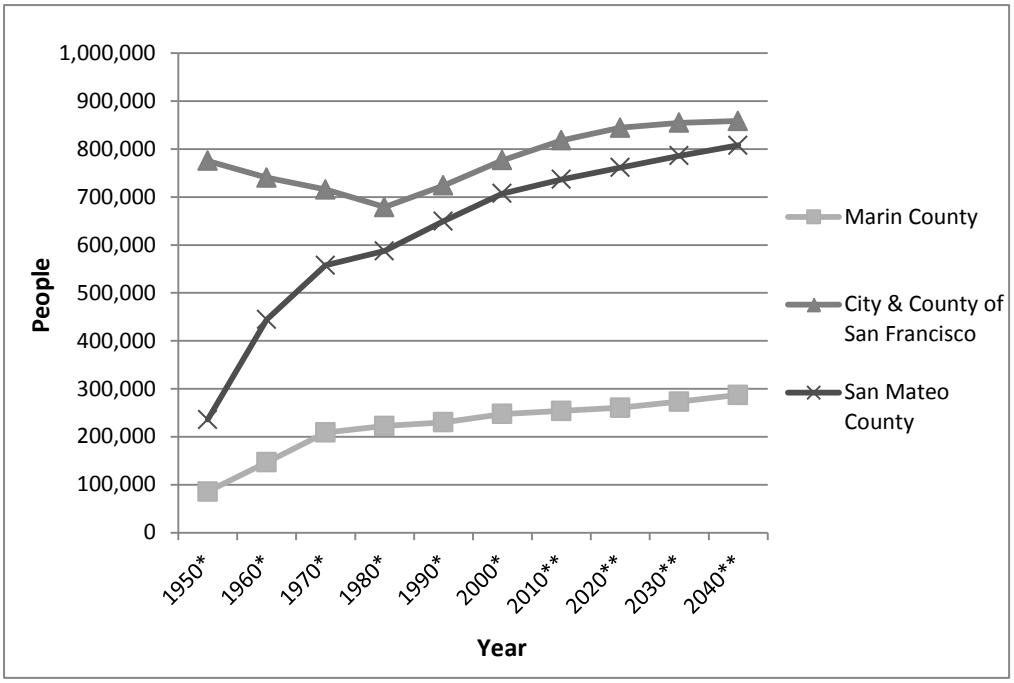
The People and the Households

In addition to assessing the status and forecast for overall population growth in the Bay Area, it is also important to understand the changing characteristics of area residents and the composition of the community's households. This section discusses the community characteristics of median age, household size, race, income, poverty levels, and education levels.



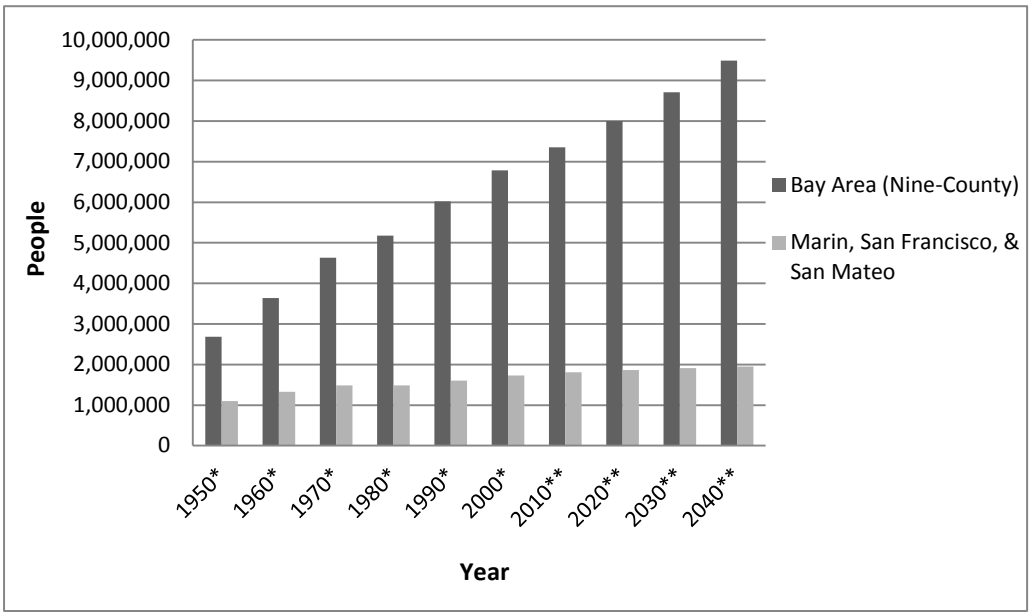
Source: California Department of Finance, Demographic Research Unit and Economic/Financial Research Unit, 2009. http://www.dof.ca.gov/

FIGURE 8. 2006 ESTIMATED POPULATIONS OF GATEWAY COUNTIES



Source: * U.S. Census Bureau, 2009.; ** California Department of Finance – Demographic Research Unit, 2009

FIGURE 9. PAST AND PROJECTED POPULATION GROWTH OF GOLDEN GATE NATIONAL RECREATION AREA GATEWAY COUNTIES



Source: * U.S. Census Bureau, 2009.; ** California Department of Finance – Demographic Research Unit, 2009

FIGURE 10. PAST AND PROJECTED POPULATION GROWTH OF GOLDEN GATE NATIONAL RECREATION AREA GATEWAY COUNTIES RELATIVE TO OVERALL BAY AREA

Median Age and Household Size

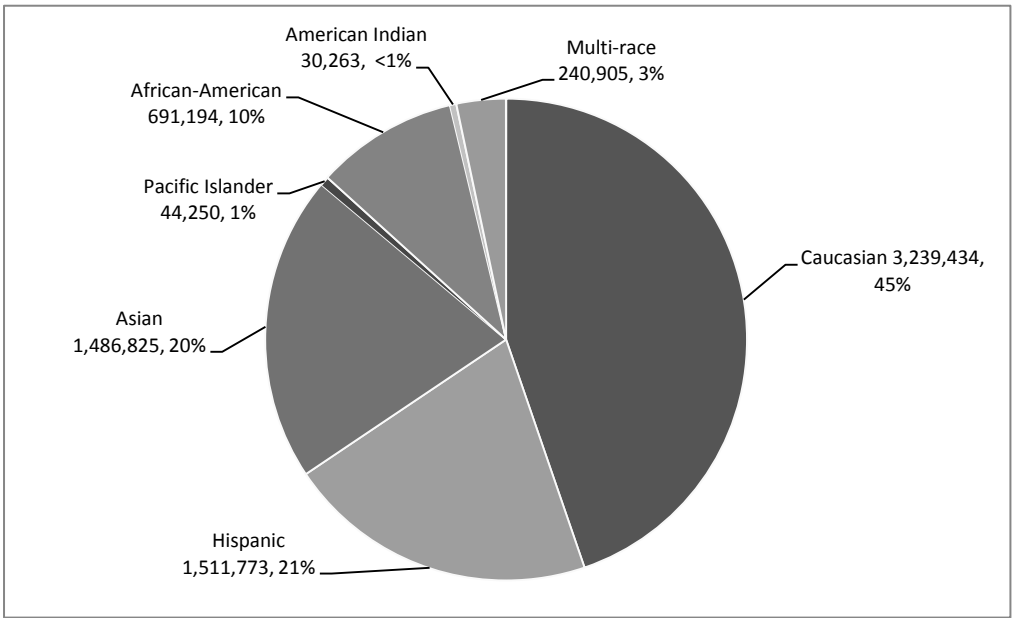
As of 2007, the Bay Area had a median age of 37.7 years. Marin, San Francisco, and San Mateo counties had median ages of 43.8, 39.5, and 39.7, respectively. The average household size in the Bay Area at that same time was 2.70 people per household. Marin County and the City and County of San Francisco both had lower average household occupancies, which were 2.35 and 2.30 people per household, respectively. San Mateo County's average household size of 2.75 people per household was slightly higher than the Bay Area average (U.S. Census Bureau 2008).

These community characteristics are expected to shift over the next 25 years due to societal changes and economic conditions. By 2035, the Association of Bay Area Governments is anticipating an increase in the Bay Area's median age to 42.5 years. The expansion of these older age groups will primarily be due to an aging population and increasing average life spans (ABAG 2007). This is consistent with other projections for the entire state of California, which indicate that the number of citizens over the age of 65 in California will double by 2020 (Roberts 2007). The Association of Bay Area Governments also anticipates that more and more people will likely be working beyond their "retirement years" over the next few decades. With a larger number of older people employed, the Association of Bay Area Governments predicts that a higher percentage of older people will be living in urban areas, which provide better public transportation opportunities and job opportunities. This trend may eventually place higher demands on public transit systems in the Bay Area, and may perhaps generate a greater need for water transport across San Francisco Bay and other bays in the region.

In addition, by 2035, the Association of Bay Area Governments anticipates that the average household size will decrease due to a percentage increase in one- and two-person households. This projection is based on the likelihood that (1) more young professionals will continue to choose not to have children or will wait longer before having them; and (2) children will be growing up and leaving the existing family households (ABAG 2007).

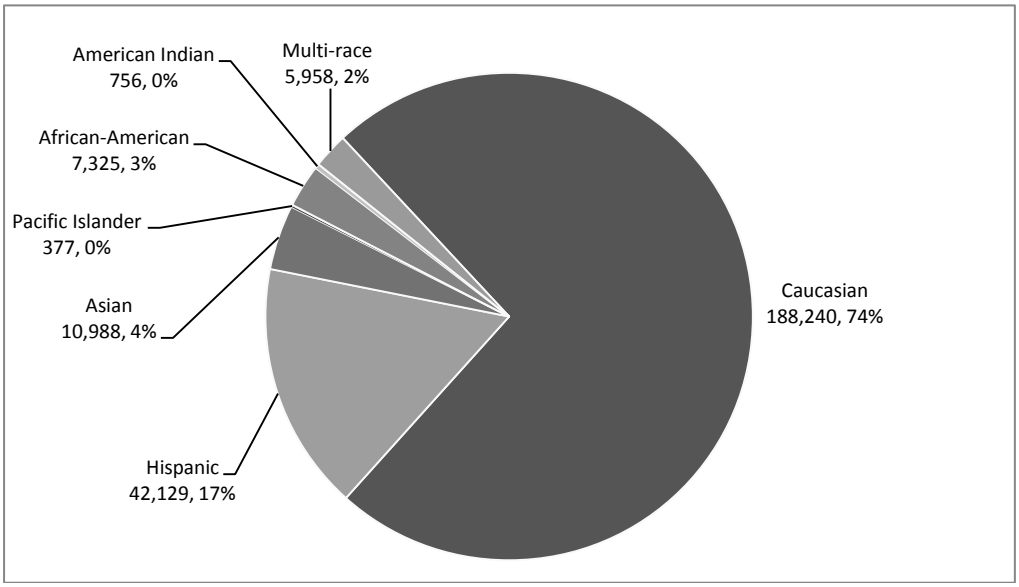
Race

Racial diversity is one of the Bay Area's unique characteristics. The following four figures show the 2007 population estimates and percentages for each racial group in the Bay Area as a whole and in each of the three adjacent counties. From a park management standpoint, understanding the racial makeup of the community can help shed light on ways to make the park more inviting, develop better outreach with the community, and improve park program relevance. In addition, this awareness contributes to improving the quality of life in the community. As discussed in the "Visitor Use and Experience" section, many people from the Bay Area's diverse racial, ethnic, and cultural groups are not visiting Golden Gate National Recreation Area due to social "barriers" (Roberts 2007).



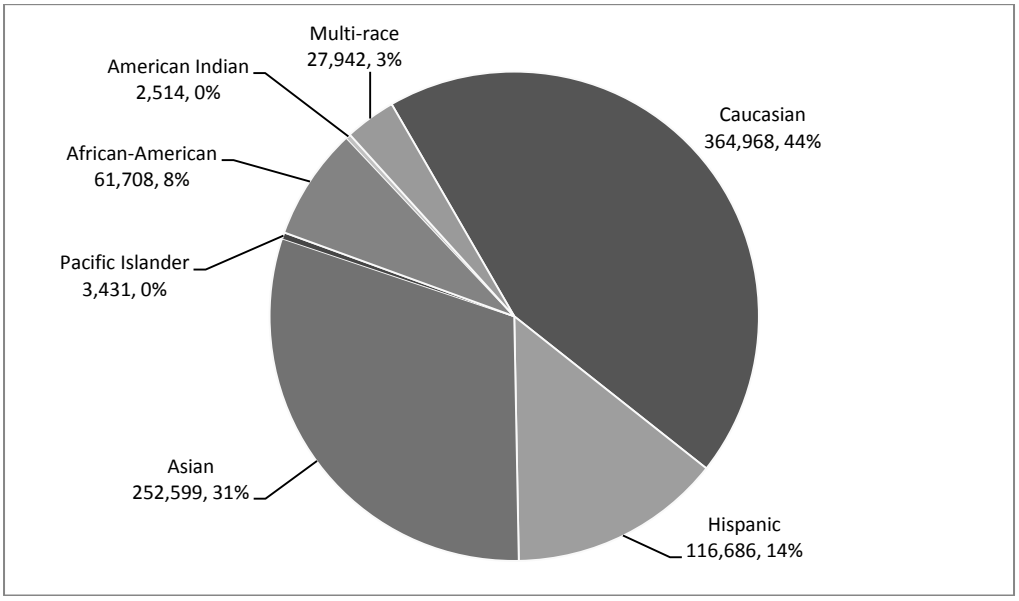
Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 11. 2007 POPULATION ESTIMATES IN BAY AREA, BY RACE



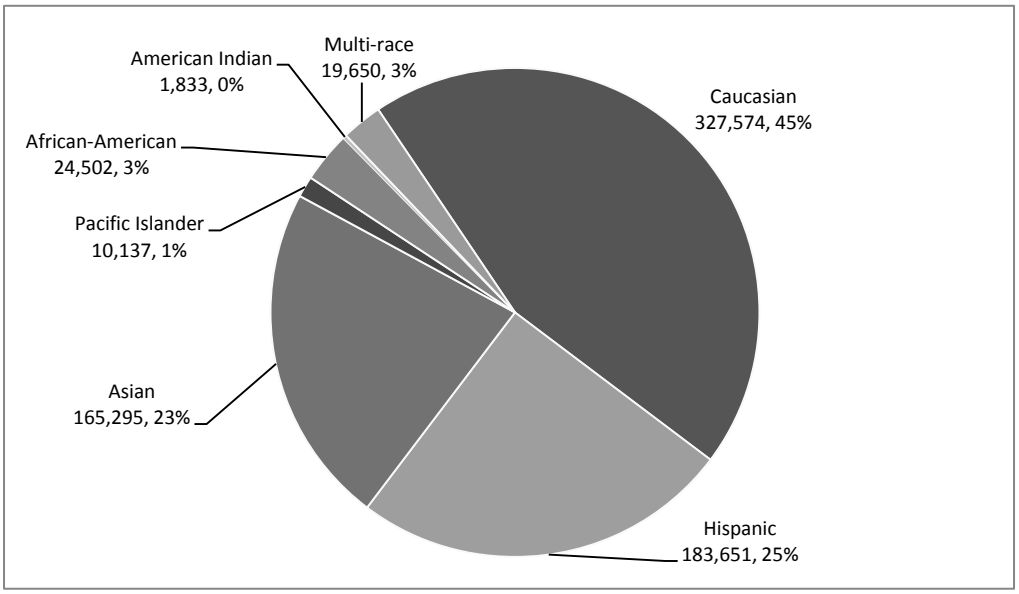
Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 12. 2007 POPULATION ESTIMATES IN MARIN COUNTY, BY RACE



Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 13. 2007 POPULATION ESTIMATES IN SAN FRANCISCO, BY RACE

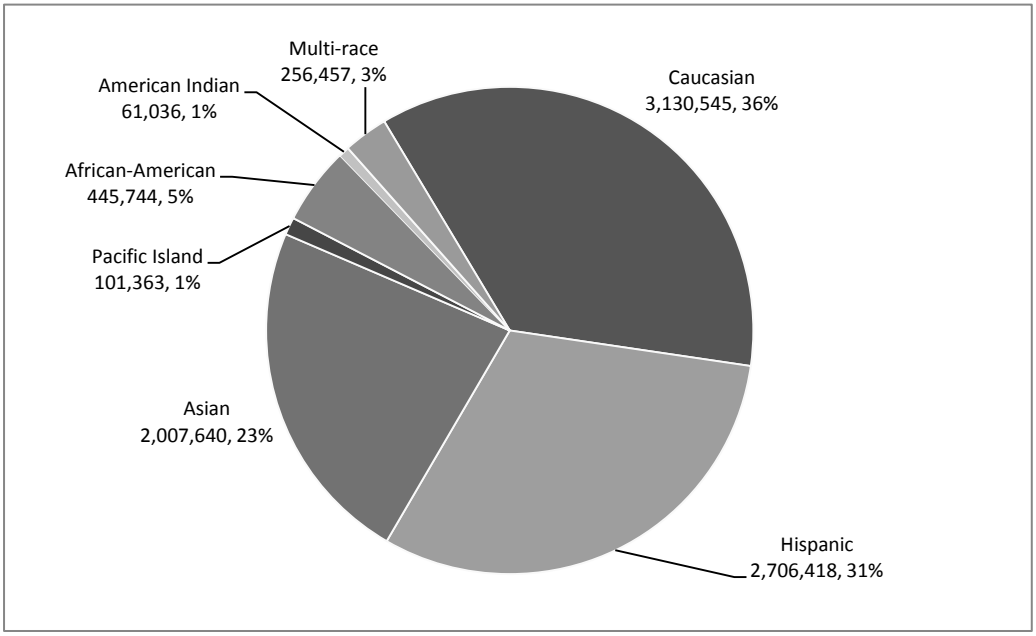


Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 14. 2007 POPULATION ESTIMATES IN SAN MATEO COUNTY, BY RACE

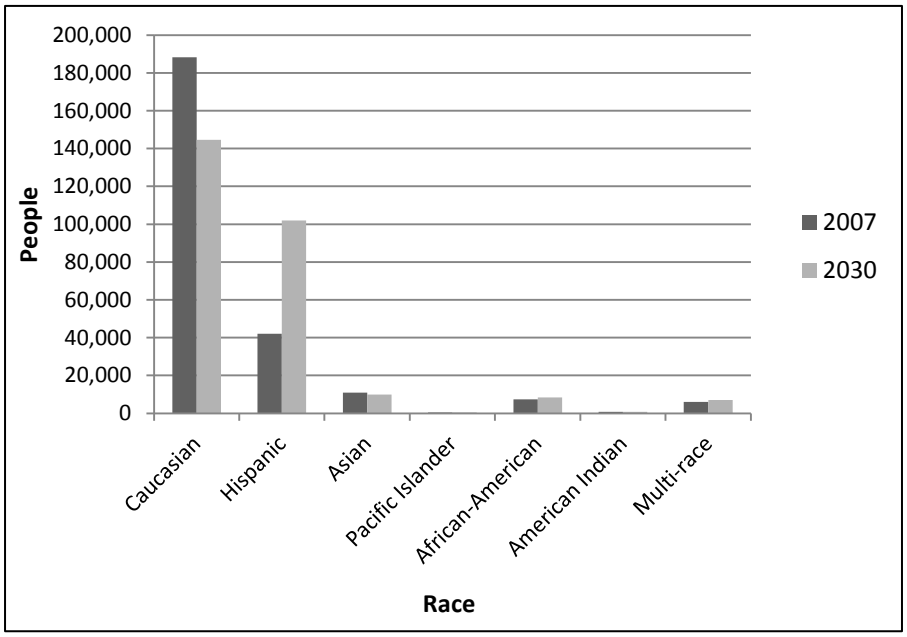
Just like the other community attributes, race percentages in the Bay Area will be shifting over the next few decades. By 2030, the California Department of Finance Demographic Research Unit projects that roughly 90% of the overall Bay Area population will be somewhat evenly divided among Caucasian, Hispanic, and Asian residents. This shift can be seen by comparing the following figure with figure 16 for Bay Area racial composition. This significant increase in the population of various minority racial and ethnic groups over the next 20 years further emphasizes the importance and need for the National Park Service to improve outreach and eliminate barriers that might keep people of all races and ethnic groups from experiencing the park.

In the three gateway counties, the racial percentage shift from the present to 2030 varies considerably (see the following figures).



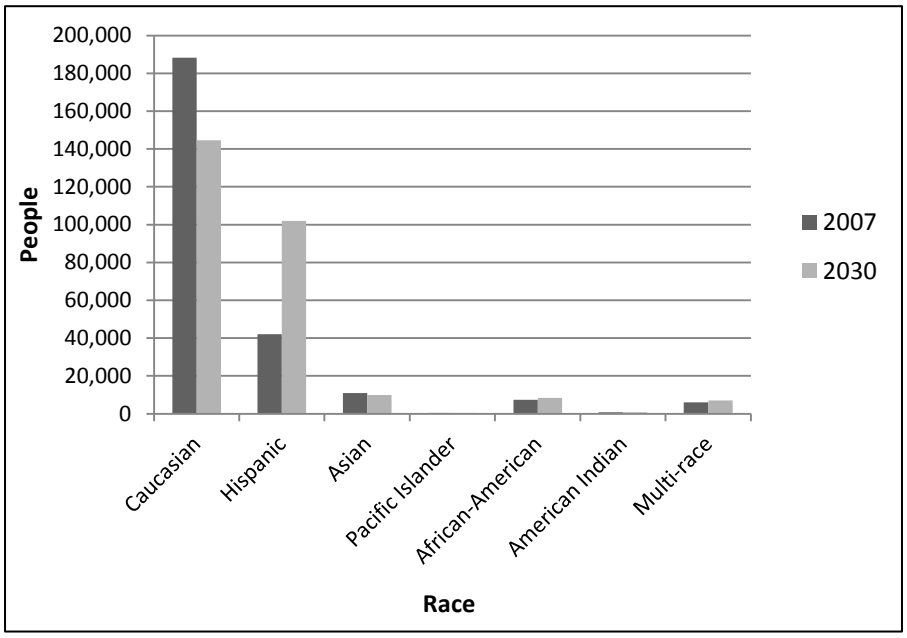
Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 15. 2007 POPULATION ESTIMATE IN BAY AREA, BY RACE



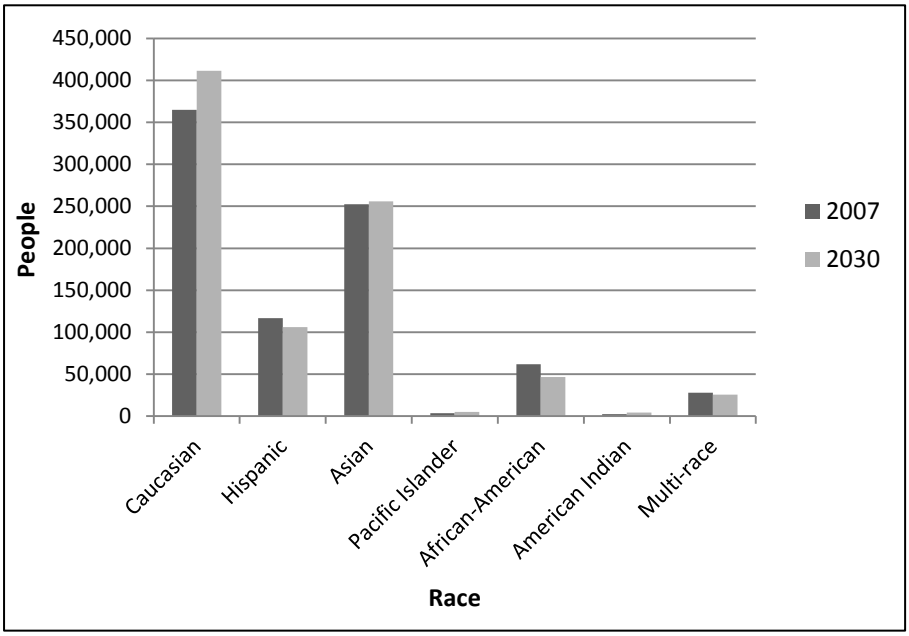
Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 16. POPULATION ESTIMATE IN 2007 AND 2030 IN MARIN COUNTY, BY RACE



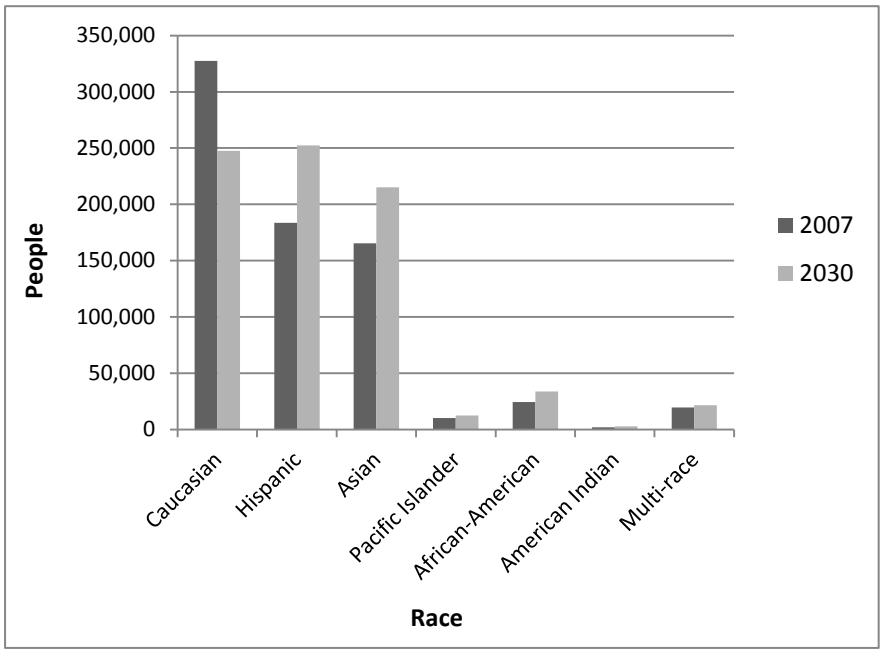
Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 17. POPULATION ESTIMATE IN 2007 AND 2030 IN MARIN COUNTY, BY RACE



Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 18. POPULATION ESTIMATE IN 2007 AND 2030 IN CITY AND COUNTY OF SAN FRANCISCO, BY RACE



Source: California Department of Finance – Demographic Research Unit, 2009

FIGURE 19. POPULATION ESTIMATE IN 2007 AND 2030 IN SAN MATEO COUNTY OF SAN FRANCISCO, BY RACE

Income, Poverty, and Education

Another factor that plays a role in park management and visitation trends is the income levels and poverty levels of residents who live in the vicinity of the park. A statistic from the California Department of Finance indicates that the three counties with the highest per capita incomes in the state as of 2005 were Marin, San Francisco, and San Mateo. In 2005, Marin County had a per capita income of $75,844 (the highest in the state), with San Francisco at $62,614 and San Mateo at $59,213 (California Department of Finance 2009).

As of 2007, 9.3% of the Bay Area's population was living below the poverty level, which was notably lower than the statewide figure of 12.7% (U.S. Census Bureau 2005–2007; American Community Survey 2008). Marin and San Mateo counties had even lower poverty rates in 2007: 7.0% and 6.7%, respectively. The City and County of San Francisco had a 2007 poverty rate of 11.7%.

The level of education attained by community residents can often correlate to the aforementioned income and poverty characteristics. Table 6 lists the percentage of residents in each area (25 years or older) who attained various levels of education as of 2007. Generally, the Bay Area education levels are notably higher than that of the state of California as a whole (U.S. Census Bureau 2008).

TABLE 6. PERCENTAGE OF 2007 POPULATION (25 OR OLDER) REACHING VARIOUS LEVELS OF EDUCATION

	California	Bay Area	Marin	San Francisco	San Mateo
No high school diploma (or equal)	20%	14%	8%	15%	12%
High school diploma (or equal)	12%	20%	14%	15%	19%
Some college, but no degree	20%	19%	18%	14%	19%
Associates degree	8%	7%	6%	5%	7%
Bachelors degree	19%	25%	31%	31%	27%
Graduate or professional degree	10%	16%	23%	19%	16%

Source: U.S. Census Bureau, 2005–2007 American Community Survey, 2008

Housing and Urban Growth

This section will identify current and projected trends in the housing market and highlight housing indicators such as home values, housing affordability, own/rent ratios, and single-family / multifamily dwelling ratios. One of the most notable characteristics of the Bay Area housing market is its very high home prices and values. Several variables affect home prices in this area. However, generally speaking, the Bay Area's expensive housing is a result of a high level of housing demand (due to population growth over the past several decades) coupled with a low level of housing construction (ABAG 2008). Compounding matters, high housing costs also result from an imbalance in available housing types, as primarily large, single-family housing units have been planned and built in many suburban Bay Area communities; these housing options may not meet the needs of area residents (ABAG 2007).

According to the U.S. Census Bureau's 2005–2007 American Community Survey, the 2007 median home value in the Bay Area was $676,800. In the same year, Marin County had a median home value of $895,100; San Francisco's median home value was $789,400; and San Mateo County had a median home value was $807,400. However, because the majority of San Francisco housing consists of attached, multifamily units, the price per square foot in San Francisco is likely higher than that in surrounding areas (table 7) (U.S. Census Bureau 2008).

TABLE 7. PERCENTAGE OF 2007 HOUSING STOCK, DETACHED, AND ATTACHED HOUSING

	Bay Area	Marin	San Francisco	San Mateo
Single-family, Detached	64%	71%	34%	68%
Multifamily, Attached	34%	28%	66%	31%

Source: U.S. Census Bureau, 2005–2007 American Community Survey, 2008

Given the high housing costs, many Bay Area residents cannot afford to own a home. In 2007, only about 15% of Bay Area households could afford a median-priced home. With the projected decrease in Bay Area household size, and the projected increase in the number of senior citizens who may be living (and possibly still working) in urban areas, demands for more compact urban housing units will likely increase. This demand may shift the housing production trends in the high demand urban areas of the Bay Area. The Association of Bay Area Government's FOCUS initiative is one multijurisdictional effort that may complement this dynamic. FOCUS is a regional planning strategy that promotes efficient and compact land development, which in turn maximizes open land conservation. The strategy also acknowledges the transportation link by encouraging the development of livable communities in areas served by public transportation.

As discussed earlier, the projected population growth in the eastern counties (Solano, Alameda, Contra Costa, and Santa Clara) will likely spur additional low-density, single-family housing development and a subsequent reduction of open space or undeveloped lands in these areas.

TABLE 8. PERCENTAGE OF 2007 HOUSING STOCK, OWNER OCCUPIED AND RENTER OCCUPIED HOUSING

	Bay Area	Marin	San Francisco	San Mateo
Owner occupied	60%	65%	38%	63%
Renter occupied	40%	35%	62%	37%

Source: U.S. Census Bureau, 2005–2007 American Community Survey, 2008

ECONOMIC EFFECTS OF THE PARK ON THE COMMUNITY

Just as population growth and community demographics have effects on the management and use of Golden Gate National Recreation Area, the park has effects on the economy of the community around it. Like many other economic engines in the Bay Area (e.g., high-tech and finance industries), Golden Gate National Recreation Area and Muir Woods National Monument contribute to the local and regional economy by generating business and revenue, creating jobs, and indirectly fueling economic growth in other industries. This section identifies these economic impacts of the park and monument and provides a synopsis of the overall Bay Area economy.

The Park's Contribution to the Economic Stability of the Bay Area

The park and monument have many direct and indirect positive effects on the Bay Area's economy. This impact can be traced to several sources and attributes, such as money spent by visitors at local businesses, jobs created at these local businesses due to the visitor demands, NPS jobs created at the park and monument, NPS contracts with local businesses, and other Bay Area tourism generated by the park and monument. This section will highlight some of these factors and explain the relevance to the overall Bay Area economy.

Contributions to Local Economy from Golden Gate National Recreation Area Visitor Expenditures

Each year, millions of park and monument visitors contribute hundreds of millions of dollars to the Bay Area economy. This money directly sustains the revenue stream and jobs at hotels, restaurants, and stores that serve park visitors. Primarily, businesses in the gateway counties of Marin, San Francisco, and San Mateo are the direct beneficiaries of this economic contribution. In addition, the visitor money stream can also have other indirect, or secondary, effects. For example, this injected money that directly supports local businesses and jobs eventually recirculates farther into the Bay Area economy and beyond. This recirculation happens when the gateway local businesses buy products or services from other sources (e.g., from wholesale suppliers), or when employees at the local businesses use their income earned at the local gateway business at other businesses in the area to sustain their lifestyle (e.g., grocery shopping, entertainment). This secondary effect is often referred to as an economic "multiplier," as one dollar injected into the local economy often has more than one dollar of effect in the local economy.

With funding from the NPS Social Science Research Program, researchers at Michigan State University have created the NPS "Money Generation Model 2" (MGM2) to measure these direct and indirect contributions from visitors to local economies. Dr. Daniel Stynes and Dr. Dennis Propst used the MGM2 to analyze the effect that park and monument visitors had on the local economy in 2003. The following table lists the 2003 visitation totals and the associated spending for each visitor type. "Visitor Party Days" refers to the number of days each visitor party or group spends in the Bay Area.

As noted in the table, local day trips accounted for 80% of all park and monument visitation in 2003, with each local day trip party spending an average of $32 per day. Understandably, hotel-based visitor parties spent much more locally per day ($229 per day). When all visitor types are included, the average park visitor party spent $43 at local businesses per day. When these visitor expenditures are totaled for the entire year, the MGM2 estimates that park and monument visitors directly injected $226,810,000 into the local economy in 2003.

The model estimates in table 10 show how this injected money circulated through the local economy. Both direct and secondary effects are included. The direct effects of these visitor expenditures include sales, income, and jobs in businesses selling goods and services directly to park visitors. Thus, the $226.81 million in visitor spending supported an estimated 4,107 jobs, as well as $176.96 million in sales and $67.05 million in personal income (wages and salaries.) As for secondary, or multiplier effects, an additional $94.13 million in sales and $34.31 million in personal incomes were generated by park spending as the money circulated through the local economy. An additional 1,194 jobs were supported by this secondary effect. When all of these effects are totaled, the $226.81 million in visitor spending supported a total of $271.09 million in sales, $101.35 million in personal income and 5,300 jobs in the community.

TABLE 9. 2003 VISITS AND ESTIMATED SPENDING BY VISITATION TYPE

	Local Day Trips	Nonlocal Day Trips	Hotel	Camp	Total
Recreation Visits	11,036,074	2,069,264	730,271	19,141	13,854,750
Percentage of Recreation Visits	80%	15%	5%	<1%	100%
Visitor Party Days	4,216,401	790,575	244,090	5,915	5,257,245
Avg. Spending Per Party Day	$ 32	$ 47	$ 229	$ 91	$ 43
Total Spending (million's)	$ 132.89	$ 37.48	$ 55.87	$ 0.55	$ 226.81

Source: Daniel Stynes, PhD and Dennis Propst, PhD, Michigan State University, "Economic Impacts of Visitor Spending, by Parks" NPS Money Generation Model 2 (MGM2), 2003

TABLE 10. 2003 ESTIMATED ECONOMIC CONTRIBUTIONS OF GOLDEN GATE NATIONAL RECREATION AREA VISITOR SPENDING, BY SECTOR

Sectors	Sales (millions)	Personal Incomes (millions)	Jobs Supported	Value Added (millions)
Direct Effects				
Motel, Hotel, B&B and Cabins	$ 26.39	$ 9.34	489	$ 14.19
Campsites	$ 0.13	$ 0.05	2	$ 0.07
Restaurants and Bars	$ 63.84	$ 22.67	1,725	$ 31.58
Admissions and Fees	$ 30.03	$ 10.61	819	$ 17.36

TABLE 10. 2003 ESTIMATED ECONOMIC CONTRIBUTIONS OF GOLDEN GATE NATIONAL RECREATION AREA VISITOR SPENDING, BY SECTOR

Sectors	Sales (millions)	Personal Incomes (millions)	Jobs Supported	Value Added (millions)
Retail	$ 35.49	$ 18.10	870	$ 28.28
Others	—	$ 6.28	201	$ 9.80
Total	**$ 176.96**	**$ 67.05**	**4,107**	**$ 101.29**
Secondary Effects	$ 94.13	$ 34.31	1,194	$ 58.51
Total Effects	**$ 271.09**	**$ 101.35**	**5,300**	**$ 159.80**

Source: Daniel Stynes, PhD and Dennis Propst, PhD, Michigan State University, *"Economic Impacts of Visitor Spending, by Parks";* NPS Money Generation Model 2 (MGM2), 2003

Contributions to Local Economy from National Park Service Operations

The employment offered by the National Park Service also contributes to the local economy. The social and economic benefits of this job base are two-fold. First, the jobs made available by the park and its partners provide hundreds of Bay Area residents with a steady income that helps sustain their lives and those of their families. Secondly, similar to the economic effects of revenue generated by park and monument visitation (as previously explained), the income earned by park and partner employees also has direct and secondary effects on the local economy. These employees contribute to the local economy by spending the money they earn on goods and services in the community. This spending directly supports local businesses and their growth. The local communities also benefit directly via the sales tax generated by this spending. In addition, secondary economic benefits (i.e., the multiplier effect) are realized when this money eventually circulates further into the Bay Area economy and beyond.

Because NPS employees reside throughout the entire Bay Area, the economic effect of their earned salaries (and subsequent spending in their respective communities) extends throughout the area as well. Table 11 summarizes the job base provided by the National Park Service as well as the salary totals for these jobs. It also identifies where NPS employees live, which hints at where the most direct contributions to the local economy occur.

As highlighted in table 11, the operation of Golden Gate National Recreation Area and Muir Woods National Monument creates 341 NPS jobs. The salaries for these jobs total to $22.8 million per year. Although each individual employee spends and saves their earned salary money according to their own personal standards, one can conclude that a large percentage of this $22.8 million circulates back into the local economy via the purchase of goods and services. All but $465,400 of this salary total goes to employees who reside and spend directly within the Bay Area. In addition, nearly two-thirds of the park employees reside in the three gateway counties (totaling to 217 jobs and $14,577,638 in salary).

TABLE 11. 2009 NATIONAL PARK SERVICE JOBS AND SALARIES, BY LOCATION OF RESIDENCE

Location of Golden Gate National Recreation Area Employee Residence	Jobs	Salary Totals
Marin County	88	$ 6,354,302
San Francisco City and County	96	$ 6,192,113
San Mateo County	33	$ 2,031,223
Other Bay Area Counties	116	$ 7,755,854
Beyond Bay Area in California	8	$ 465,400
Totals	**341**	**$22,798,892**

Source: Golden Gate National Recreation Area, National Park Service, 2009

In addition to the employee salaries, the NPS operation also supports the local economy by contracting out services with private enterprises in the Bay Area. These government contracts help support other businesses and their employees, which also has secondary multiplier effects when this money circulates through the community. In the NPS fiscal year of 2008, the National Park Service spent $14,807,075 on contracts with private entities.

Tourism Attraction that Complements San Francisco and Other Bay Area Sites

In addition to injecting money directly into the local economy and supporting other local institutions, Golden Gate National Recreation Area and Muir Woods National Monument also contribute to the economy by helping generate tourism to other Bay Area attractions. This economic value primarily applies to visitors who come from outside of the Bay Area. From a tourist perspective, the allure of visiting the Bay Area is notably enhanced by the many sites, amenities, and resources of the park and monument. When these attractions are considered collectively with other Bay Area attractions, the Bay Area becomes a very appealing region to visit.

The value of this synergistic effect extends well beyond the state of California, and the nation. International tourism in the Bay Area is a strong and growing industry. In addition, Golden Gate National Recreation Area contributes to the Bay Area's international tourism draw. For example, nearly 25% of visitors to Alcatraz Island came from other countries (Manning et al. 2007). When combined with the Bay Area's other diverse attractions, the many sites and resources of Golden Gate National Recreation Area play an important role in sustaining and expanding this international tourism market.

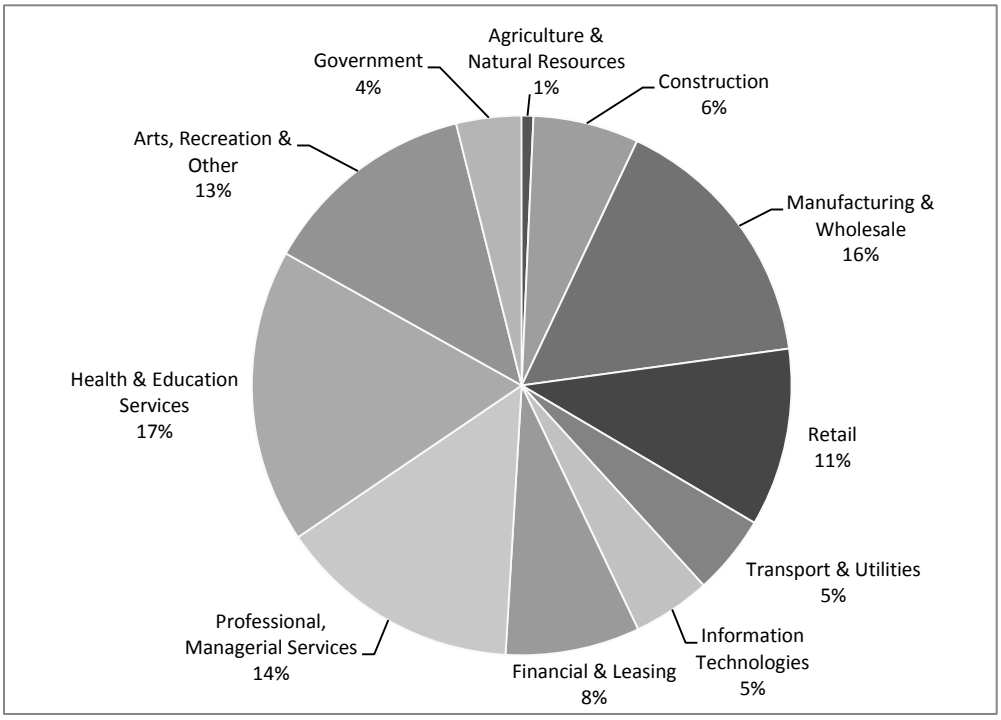
Bay Area Commerce and Industry Trends

As the Bay Area population has grown and diversified over the past 100 years, the local economy has also expanded and evolved. These changes have been brought on by local, state, national, and international attributes and events. For example, events such as World War II and the technology boom have played integral roles in the Bay Area's

economic development. The Bay Area's economic history over the past 100 years can be defined by three general eras:

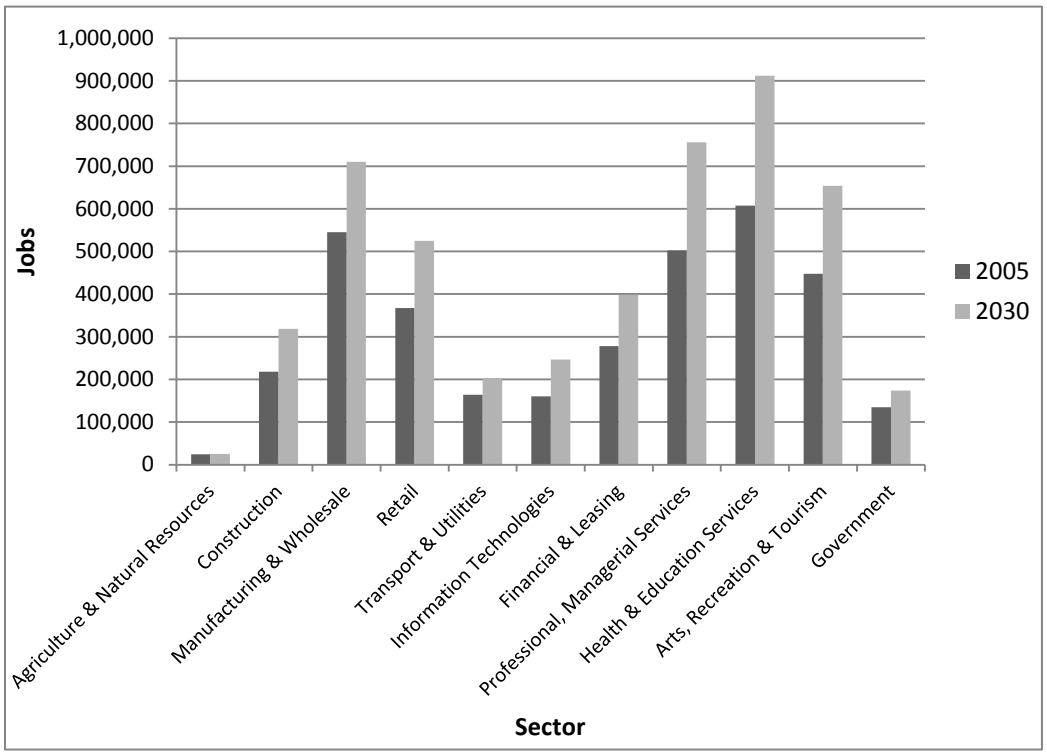
- **1900s to World War II** – This economic era can be described as being somewhat pastoral, with the local economy driven by industries such as seaport commerce, dairy farming, and fishing.
- **World War II era** – The Bay Area served as Central Command for the U.S. Army Pacific operations during World War II. As a result, the driving force on the local economy shifted toward military sea base and air base activities and manufacturing.
- **Post–World War II through late 20th century to present** – Over the past several decades, the Bay Area's economy has evolved, grown, and diversified considerably. The notable driving forces of the diversified economy include finance, education, local and regional tourism, health, arts, information technology, and expanding Asian markets.

Figures 20 and 21 display the current and future projected distribution of jobs across various sectors or industries.



Source: Association of Bay Area Governments, *"Projections 2007"*

FIGURE 20. 2005 BAY AREA JOBS BY SECTOR



Source: Association of Bay Area Governments, *"Projections 2007"*

FIGURE 21. 2005–2030 BAY AREA EMPLOYMENT PROJECTIONS, BY SECTOR

TRANSPORTATION (INCLUDING GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT)

This section summarizes existing transportation conditions for the planning area in Golden Gate National Recreational Area and Muir Woods National Monument. It addresses both internal circulation and access by all modes, including automobile, public transportation, bicycle, and pedestrian. Descriptions of conditions for Golden Gate National Recreation Area park sites are grouped by county (Marin, San Francisco, and San Mateo), with the exception of two park sites, Alcatraz Island and Muir Woods National Monument, which are addressed separately.

Analysis was conducted using a range of available materials, most of which are referenced directly within the text. Primary sources included the Phase 1 Transportation Analysis developed for this general management plan, for which a database incorporating information from close to 100 sources was developed by Golden Gate National Recreational Area staff. Raw data on transportation conditions collected in recent years were provided to the authors by Golden Gate National Recreation Area staff. Additional sources, such as California Department of Transportation traffic counts, were also used.

REGIONAL TRANSPORTATION CONTEXT

Existing and Projected Travel Demand

The Golden Gate National Recreation Area is within the San Francisco Bay Area, a metropolitan region of approximately 7 million residents. In the counties surrounding the Bay Area, there are another 3.9 million residents (U.S. Census Bureau 2009). In all, approximately 11 million people live within roughly a two-hour drive of Golden Gate National Recreation Area park sites.

This urban context, along with their popularity among tourists, places heavy demands on park sites. In 2007, Golden Gate National Recreation Area experienced total visitation of 20.8 million. While park sites in San Francisco are generally accessible to motorists, transit users, cyclists, and pedestrians, roads to and within many park sites in Marin and San Mateo counties are winding and narrow; both parking and public transit are limited in many places. These locations can "feel" remote during nonpeak periods despite their relative proximity to millions of residents; they are served by rural roads that were not designed to accommodate the level of traffic demand of major destinations, such as a national park. On busy summer weekends, two-lane roads leading to popular park sites can become severely congested.

Already, the Bay Area is the second-most-congested metropolitan region in the United States, behind only Los Angeles (Schrank and Lomax 2007), with an average yearly delay per motorist caused by congestion of 60 hours. By 2030, the population of the Bay Area is expected to grow to 8.7 million, and the surrounding counties are projected to reach 5.7 million, resulting in a total population within a two-hour drive of Golden Gate National Recreation Area park sites of approximately 14.4 million. The total number of vehicle miles traveled in the Bay Area on an average weekday is projected to increase from approximately 136 million in 2006 to as much as 179 million by 2035 (Metropolitan Transportation Commission 2008). Still, residents of the San Francisco-

Oakland urbanized area take more trips, per capita, on public transportation than do residents of any other U.S. urbanized area except New York: about 130 per year on average (American Public Transportation Association 2008).

Regional Transportation Policy

In order to accommodate population growth without compromising the regional environment or economy, Bay Area policymakers have increasingly sought to steer development and transportation trends in more sustainable directions. In its introduction to the *Transportation 2035 Plan for the San Francisco Bay Area,* the Metropolitan Transportation Commission, stated that:

> *By means of its investment choices and adopted policies, the Draft Transportation 2035 Plan aims to stimulate the use of public transit, increase the safety, utility and appeal of bicycling and walking, and reduce emissions by private automobiles in the Bay Area while increasing the efficiency of the roadway systems for all users.*

While the Metropolitan Transportation Commission (through the regional transportation plan and related Transportation Improvement Program) sets funding priorities regionally, most transportation planning decisions in the Bay Area are made either at the county level by congestion management agencies or by transit agencies as part of their short-range transit plans. Regional and local transit agencies are identified on the following pages. Congestion management agencies in counties with Golden Gate National Recreation Area park sites include the Transportation Authority of Marin, San Francisco County Transportation Authority, and City/County Association of Governments of San Mateo County. Marin, San Francisco, and San Mateo are all "self-help" counties under California law, meaning that voters have approved local sales taxes devoted to transportation.

Regional Transportation Network

The Bay Area is home to one of the nation's most expansive highway systems. The regional transit network is less developed, although regional rail systems and ferry routes provide access to some Golden Gate National Recreation Area park sites via local rail and feeder bus connections.

Three major highways provide primary access to Golden Gate National Recreation Area park sites:

- *Highway 101*, which is a freeway in Marin and San Mateo counties and southern San Francisco and an arterial surface route in northern San Francisco, provides access to park sites in all three counties.
- *State Route 1*, which transitions from a two-lane highway in Marin County to an urban arterial in San Francisco and a freeway in northern San Mateo County before returning to a two-lane highway in southern San Mateo County, also provides access to park sites in all three counties. [**Note**: While many segments of this road have local names (e.g., Shoreline Highway, 19th Avenue, Pacific Coast Highway), throughout this document it is referred to as State Route 1.]
- *Interstate 280*, a freeway, provides access to Golden Gate National Recreation Area park sites in San Francisco and in San Mateo County.

Two regional railways and several ferry routes provide transit access to Golden Gate National Recreation Area park sites:

- *Bay Area Rapid Transit*, or BART, is a metro system serving San Francisco, Alameda, and Contra Costa counties, as well as northern San Mateo

County. From BART stations in San Francisco and San Mateo counties, local transit service is available to park sites in San Mateo, San Francisco, and Marin counties.

- *Caltrain* is a 77-mile-long commuter rail line operating from Santa Clara County through eastern San Mateo County to San Francisco. Local buses provide connections from Caltrain stations to park sites in San Mateo, San Francisco, and Marin counties.
- *Ferry* service is provided by the Golden Gate Bridge, Highway and Transportation District as Golden Gate Ferry, and by a private operator, Blue & Gold Fleet. At Sausalito in Marin County and in San Francisco, ferry service provides connections to transit or bike routes that can then be used to reach Golden Gate National Recreation Area park sites. Ferries also provide the only public access to Alcatraz Island. The 2007 *Golden Gate National Recreation Area Water Shuttle Access Study and Conceptual Plan* proposed additional ferry service to three Golden Gate National Recreation Area park sites: Fort Baker, Fort Mason, and the Presidio/Crissy Field in San Francisco.

"Transbay" buses operated by the East Bay's AC Transit also connect to San Francisco Municipal Railway (Muni) routes serving Golden Gate National Recreation Area park sites at San Francisco's Transbay Transit Center. While most Transbay routes are commuter-oriented—offering the greatest amount of service during weekday morning and evening commuting periods—a few provide midday and weekend service.

Summary

In general, the Bay Area transportation network is oriented toward commuters; access to Golden Gate National Recreation Area park sites, which are generally relatively remote, is limited. In San Francisco, park destinations are closer to the community and well-served by transit. Even there, however, many Golden Gate National Recreation Area park sites are on the city's west side, some distance from regional road and public transit networks. Transit access to park sites in Marin and San Mateo counties is especially limited. Demand exists for expanded transit options.

PARK TRANSPORTATION NETWORK

In this section, transportation conditions are first described for the two most-visited park sites in the planning area—Muir Woods National Monument and Alcatraz Island. Then conditions are described for park sites in each county: Marin, San Francisco, and San Mateo. Within each section, conditions are first summarized, then described by mode. Conditions are analyzed both in terms of access to park sites and internal circulation. Detailed maps of each county's transportation network can be found at the end of the transportation discussion.

Muir Woods National Monument

Muir Woods National Monument is a fee site, where an entrance fee is collected, and is a major tourist destination with an annual visitation of more than 800,000. For visitors accessing the site from Highway 101, the trip requires travel on almost 10 miles of winding, two-lane county and state roads. Traffic on the two-lane roads leading to the site is often congested, especially at intersections of State Route 1 (Shoreline Highway). In addition, parking lots regularly fill by midmorning on busy summer weekends. Private tour buses serve Muir Woods National Monument year-round. With the exception of summer and "shoulder season" weekends, there is no public transit service. Bicycle and pedestrian access to the remote canyon site is arduous. Parking at the site is especially problematic; on busy days, more cars are parked

informally along the shoulder of Muir Woods Road than in the designated parking lots, resulting in traffic congestion near the park entrance, resource damage, and conflicts between autos and pedestrians.

Traffic and Parking

Auto access to Muir Woods National Monument is along a narrow, twisting route that approaches from the east by way of a steep descent (with an average grade of more than 8%).

Traffic congestion along State Route 1 (Shoreline Highway) approaching the monument can be severe during peak periods, as noted previously. In the 2004 report from HDR, Inc., *Transportation Planning to Address Access and Congestion Issues – Muir Woods National Monument,* traffic studies indicated a peak season intersection level of service of "F," where State Route 1 intersects with Tennessee Valley Road and Flamingo Road; and a level of service of "D" where State Route 1 intersects Muir Woods Road and Panoramic Highway. "F" is the lowest level of service, indicating average delay per vehicle of more than 50 seconds. The *Comprehensive Transportation Management Plan* also reported an accident rate along Panoramic Highway, a two-lane but relatively direct route along the spine of Dias Ridge between State Route 1 and Muir Woods Road, that was 140% higher than the statewide average for similar roads (Robert Peccia & Associates 2004a).

It is estimated that even on summer weekends when Muir Woods Shuttle service is available, more than 60% of Muir Woods National Monument visitors arrive by private automobile (Nelson\Nygaard 2008a). Golden Gate National Recreation Area has estimated average vehicle occupancy of 2.5 persons, meaning that close to 1,200 autos might arrive at the National Monument over the course of a busy day. In 2004, as many as 2,855 cars were counted on Upper Muir Woods Road in a single day, suggesting that the actual number of cars arriving at the monument on a busy day might be even higher. Also in 2004, up to 344 cars were observed arriving at the monument in a single hour (Robert Peccia & Associates 2004b).

There are no current mode share data indicating how many visitors reach Muir Woods National Monument by tour bus, bicycle, or hiking.

This traffic results not only in congestion on roads approaching the national monument, but in congestion in the main and satellite parking lots, as cars circle in search of parking. It also results in congestion and auto-pedestrian conflicts along Muir Woods Road where overflow parking is accommodated along the shoulder and pedestrians must at some points walk in the roadway. For planning purposes, there are 179 parking spaces at Muir Woods National Monument in the main and satellite lots, and accommodations for approximately 175 additional spaces along Muir Woods Road; the total then is approximately 350 parking spaces. However, up to 475 cars have been observed parked along the road near the monument at one time (Robert Peccia & Associates 2004b). This is possible because motorists park along the shoulder of Muir Woods Road more than a mile from the monument entrance, and walk along or in the road to the entrance.

Transit

Muir Woods Shuttle. Established in 2005 as a pilot program, the Muir Woods Shuttle is now funded on an annual basis by Golden Gate National Recreation Area and the Marin County Transit District, or Marin Transit. These partners have continued to improve service each year, and ridership has likewise increased each year.

The shuttle is a seasonal service, operating on weekends during the five months from May through September. From Memorial Day weekend to Labor Day weekend, it consists of two routes:

- A Marin City to Muir Woods National Monument route operating on 20-minute headways from the Golden Gate Transit hub at Marin City (where connections can be made to buses from San Francisco) to the monument. This route also stops at satellite parking lots near the junction of Highways 101 and State Route 1 (approximately 9 miles from the monument).
- A Sausalito to Muir Woods National Monument route timed to connect with Golden Gate Ferry service from San Francisco at Sausalito (this route also serves Marin City and the Highway 101 / State Route 1 junction).

During the "shoulder season," there is no Sausalito service, and the Marin City route operates on 30-minute headways.

Much of the shuttle's ridership consists of motorists who, informed by changeable message signs on Highway 101 that the monument parking lots are full, follow instructions to exit at State Route 1, park, and take the shuttle instead. The service has proved to be extremely successful since 2009, providing 35,000 trips on weekends and holidays during the May to September season. The farebox recovery rate is 22%, comparable to many urban transit services and ridership has grown from just a little more than 10,000 in its first year, even as the formerly free service has increased fares to $3. Close to 10% of summer weekend visitors to the park now arrive by shuttle, and in 2008, it averaged 18.9 passengers per hour, higher than many suburban bus routes (Nelson\Nygaard 2008b).

The Muir Woods Shuttle has eased pressure on the overburdened parking areas at the monument and on the roads leading to the site. In addition, by connecting to regional transit services, it has greatly expanded nonautomobile access for visitors to the park. Moreover, surveys of shuttle riders and other park visitors indicate that significant demand may exist for direct service between San Francisco and the monument; while relatively expensive to operate, this would serve to further reduce demand for automobile access to the monument.

Tour Bus

While no data is available on private tour bus operators serving Golden Gate National Recreation Area park sites, park staff estimate that up to 20% of visitors to the monument may arrive by tour bus. Twelve to 14 spaces in the lower parking lot are reserved for tour buses, and multiple operators provide tours, typically departing from San Francisco and including a stop in Sausalito.

Bicycle and Pedestrian

Bicycle access to Muir Woods National Monument is poor. State Route 1 and Muir Beach Road are narrow, winding two-lane roads and lack bike lanes and shoulders for much of their length, although bicycle parking is provided. Pedestrian access is also poor, limited to trail connections that converge at the monument (including the popular Dipsea Trail, which connects the monument to the town of Mill Valley 3 miles away and to Stinson Beach to the west).

Summary

Muir Woods National Monument is accessed primarily by automobile or tour bus, although public transit service is available on summer and "shoulder season" weekends. Cyclists and pedestrians must bike or hike long distances to reach the remote site, although trails to and within the monument are very good. Parking at the monument is limited and not well-configured—overflow parking along the shoulders of a narrow road is common—and this results both in congestion and in conflicts between traffic and pedestrians.

Alcatraz Island

With approximately 1.4 million annual visitors, Alcatraz Island is Golden Gate National Recreation Area's most visited site. Alcatraz is an island in San Francisco Bay; while admission to the park itself is free, the only access to the island is a 15-minute trip by ferry at a cost of $26 per person (2009). Ferries depart from a landing near Fisherman's Wharf in San Francisco, which is highly accessible by many modes of transportation.

Traffic and Parking

Automobile access to the Alcatraz Island ferry landing at Pier 33, just southeast of Fisherman's Wharf, is generally good. The site is immediately adjacent to the Embarcadero, a six-lane boulevard connecting directly to the San Francisco-Oakland Bay Bridge (Interstate 80) and Interstate 280, and indirectly to Highway 101. Pier 33 is also near Bay Street, a four-lane city street connecting to Highway 101 and the Golden Gate Bridge. However, all of these routes can become congested during peak hours.

Parking near the Alcatraz Island ferry landing at Pier 33 is fee parking, and much of it consists of on-street meters with time limits of two hours or less. However, several large parking garages are nearby.

Public Transit

Ferry service to Alcatraz Island currently departs from Pier 33. Service is provided by Alcatraz Cruises, a park concessioner, and operates as often as every 30 minutes. Other ferry operators also offer Bay tours that pass by Alcatraz Island and other Golden Gate National Recreation Area waterfront park sites. A number of public transportation options within San Francisco provide visitors with good access to Pier 33.

Bicycle and Pedestrian

Pier 33 is easily accessible by bicycle, and several bicycle rental companies are nearby. Bicycles are not allowed aboard Alcatraz Island ferries, but limited bicycle parking is available at Pier 33 on a first-come, first-served basis.

Likewise, pedestrian access is good. From the south, a broad promenade runs alongside the Embarcadero, and San Francisco city streets to the west generally feature spacious sidewalks.

Summary

Alcatraz Island can be accessed only by ferry from San Francisco, although access to the ferry landing is good for many modes of transportation. While parking is available for a fee, there is on-street metered parking and several large garages nearby. Public transit access is excellent, and bicycle and pedestrian access over San Francisco city streets is likewise very good.

Marin County Park Lands

Golden Gate National Recreation Area park sites within Marin County are generally distinct in character from those in San Francisco and San Mateo counties. As Marin County park sites are within western Marin County, many are some distance from the county's developed eastern corridor. Due to this isolation, Golden Gate National Recreation Area park sites in Marin County are accessed primarily by automobile, although limited public transit service is available, and many recreational cyclists ride long distances to access them. In addition, there are directional and park identity signs both within the park lands and on roads leading to them that are generally clear and highly visible; there is also limited water access for private boats to Fort Baker through a marina.

The relative remoteness of Golden Gate National Recreation Area park sites within Marin County contributes to their popularity with both residents and tourists. However, it also results in severe congestion at the most accessible sites during peak periods, both on roads leading to the park sites and around parking areas. Congestion is compounded by insufficient parking and conflicts between automobile and pedestrians, who often must walk in or alongside roadways due to a lack of infrastructure, including both sidewalks and trails paralleling roadways at popular destinations (such as Tennessee Valley).

Means of visitor access to the Marin Headlands were sampled on Fridays, Saturdays, and Sundays in the summer of 2000 and spring of 2001. The survey showed that 91% arrived by private automobile, 4.7% by bicycle, 4% by bus (including public transit as well as private, chartered, and school buses), while just 0.2% arrived on foot (NPS 2009a).

Traffic and Parking

Many visitors to Marin County Golden Gate National Recreation Area park sites arrive in the county by driving over the Golden Gate or Richmond-San Rafael bridges, and even residents of Marin County use Highway 101 for parts of their trips. Once motorists have exited Highway 101, however, access to many Golden Gate National Recreation Area park sites requires steep, winding drives on narrow rural roads.

Average volumes of traffic on these roads do not necessarily suggest congestion, and outside the busiest peak periods there is little congestion on roads leading to or within Golden Gate National Recreation Area park sites in Marin County. Traffic studies conducted in October and November of 2009 by the California Department of Transportation, show the level of service A and B on State Route 1 (Shoreline Highway) between Highway 101 and Northern Avenue. However, traffic increases substantially on summer and holiday weekends. Annual average daily traffic on State Route 1 in the area of Stinson Beach, for example, is just 4,100 vehicles per day, and peak hour traffic is 420 cars per hour, or 7 vehicles per minute in both directions combined. Yet, the number of cars at the entrance to Stinson Beach reached 39,709 in July 2007, 455% higher than in January, and in 2004, counts reached 4,451 in a single summer day (Nonmotorized Transportation Pilot Program 2005). Even greater monthly traffic has been observed along Conzelman Road in the Marin Headlands, where 80,300 vehicles were recorded at a point in the Rodeo Valley in the month of September 2007. In 2000, traffic counts on roads entering and exiting the Marin Headlands near the northern end of the Golden Gate Bridge found combined traffic on summer weekends of approximately 10,200 vehicles, with about two-thirds on Conzelman Road and the remainder on Bunker Road. Summer 2000 weekend traffic on Alexander Avenue (which is just outside the Marin Headlands, and thus not maintained by the National Park Service), connecting the Golden Gate Bridge to Sausalito and providing access to the Marin Headlands and Fort Baker, was approximately 11,300 vehicles (NPS 2009a).

Roads within the park lands of Marin County managed by the National Park Service are often in poor condition. A 1999 survey of pavement conditions within the Marin Headlands and Fort Baker found fully two-thirds of roads to be in poor condition (NPS 2009a). Conditions have not changed substantially since then, although all 18 miles of NPS roads in the Marin Headlands and Fort Baker are scheduled for rehabilitation beginning in 2010.

The greatest traffic congestion within Golden Gate National Recreation Area park sites appears to occur immediately around parking areas at popular destinations. Whether they consist of large lots or informal, roadside parking along shoulders, cars turning into or out of parking areas and pedestrians traveling to or from their cars can create congestion and unsafe conditions along narrow roads.

This congestion is a result of demand exceeding supply, with undesirable shoulder parking as a result. At the Tennessee Valley trailhead, where there are 86 formal parking spaces, the *Comprehensive Transportation Management Plan* reported maximum occupancy, including cars parked alongside Tennessee Valley Road, of 202 vehicles or 235% of capacity. Parking lots at Stinson Beach (124%) and Muir Beach (107%) were also found to be filled beyond capacity (Robert Peccia & Associates 2004a). The *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* (2009), meanwhile, reported up to 35 cars parked at Battery Mendell in the Marin Headlands, in an area with a capacity of 30, and 24 cars were in 24 spaces at Battery Spencer, where, as at Muir Woods National Monument, cars, buses, and pedestrians come into conflict when there is parking along a narrow road (NPS 2009a). Although all Golden Gate National Recreation Area parking within the plan area is currently free, approved plans will introduce fee parking in the Marin Headlands and at Fort Baker.

Public Transit

Public transportation access to Marin County Golden Gate National Recreation Area park sites is limited. Most destinations within the park lands are inaccessible via transit without significant hiking or biking from the closest transit stops, although a few park sites are served directly or indirectly by infrequent, weekend-only, or seasonal bus routes. Most of those routes serve a limited area, although connections can be made to regional services in eastern Marin County and San Francisco. Three public transit agencies provide some form of service to Golden Gate National Recreation Area park sites, while a seasonal shuttle service to Muir Woods National Monument is operated jointly by the National Park Service and a local transit provider. In general, transit service in Marin County is either oriented toward commuters (Golden Gate Transit) or those taking local trips (Marin Transit), or serves Golden Gate National Recreation Area park sites, but only on a limited basis (West Marin Stagecoach). More information on public transit services to Marin County Golden Gate National Recreation Area park sites can be found in appendix E.

While no data is available on private tour bus operators serving Golden Gate National Recreation Area park sites, park staff believes that up to 20% of visitors to Muir Woods National Monument may arrive by tour bus. Twelve to 14 spaces in the lower parking lot are reserved for tour buses, and multiple operators provide tours, typically departing from San Francisco and including a stop in Sausalito. Tour bus use is also common (if accounting for a relatively small mode share) in the Marin Headlands and Fort Baker.

Bicycle

Western Marin County is a popular destination for recreational cyclists. Despite blind curves and heavy traffic, road cyclists seeking a challenge are a common sight on its steep, narrow roads, while mountain biking remains popular on fire roads and trails throughout Marin County, the birthplace of the sport. Many San Francisco visitors rent bicycles and ride them over the Golden Gate Bridge making the return trip via ferry from Sausalito. Alexander Avenue between Sausalito and the bridge, which is a regional road administered by the Golden Gate Bridge District, is a popular route for cyclists (although it lacks a complete bike lane and is confusing and potentially unsafe for novice cyclists).

On May 11, 2008, a sunny Sunday, Golden Gate National Recreation Area counted 1,432 cyclists northbound on Alexander at Bunker Road above Fort Baker.

Although amenities for cyclists are currently limited, there is bicycle parking at Battery Spencer. As part of the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan* (2009), a number of improvements for bicyclists are being made.

These include roadway improvements to enhance bicycle safety, a new bicycle and pedestrian path between the Marin Headlands and Fort Baker, new trail access, and an uphill bicycle lane on Conzelman Road from Alexander Avenue to McCullough Road.

Pedestrian

The key issue for pedestrians at Marin County park sites is conflicts with automobiles near congested parking areas; this issue was described at length in the previous sections on Marin County traffic and parking. Remaining pedestrian issues are addressed below.

Golden Gate National Recreation Area park sites in Marin County are generally relatively remote. Muir Beach and Stinson Beach are 6 to 12 miles from the Highway 101 corridor, and are adjacent to small communities that are surrounded by park land, while the eastern edge of the park lands in the county's southwestern corner is bordered by the larger communities of Marin City, Tamalpais Junction, and Mill Valley. Despite several trails that extend into these communities, pedestrian access to park sites is fairly limited. Even in those residential areas adjacent to park lands, there are few sidewalks, and residents of southern Marin County often drive to nearby trailheads such as Tennessee Valley. Tourists sometimes walk over the Golden Gate Bridge from San Francisco into Marin County, but are not likely to ascend into the Marin Headlands farther than Battery Spencer, which is a short distance beyond the northern end of the bridge.

However, Golden Gate National Recreation Area park sites in Marin County feature an extensive network of fire roads and trails of all types. Trail connectivity is good, both within Golden Gate National Recreation Area park sites and to trails extending into adjacent park lands such as Mount Tamalpais State Park. Coverage is dense in the southern park lands, extending from Muir Beach into Tennessee Valley and the Marin Headlands. While many trails within Marin County park sites are multiuse, bikes, dogs, or horses are not allowed on some trails.

Summary

Marin County park sites are accessed primarily by private automobile. The most popular destinations experience considerable congestion during peak periods on winding, two-lane roads and exceed the capacity of limited parking areas. There is little public transit service to park sites within Marin County. While bicycle access can be challenging due to topography and narrow roadways, these park lands are popular destinations for recreational cyclists. There is little pedestrian access to the park sites, but hiking is a popular activity within them.

San Francisco Park Lands

Golden Gate National Recreation Area park lands in San Francisco are generally immediately adjacent to urban neighborhoods. As a result, San Francisco park sites are distinct: they are much more multimodal in terms of both access and circulation than are park sites in Marin and San Mateo counties, which are strongly oriented toward the automobile. Pedestrian, bicycle, and public transit access is generally very good. One site (Ocean Beach) is directly served by two rail transit lines. The park sites include large parking lots. Signage is good within park sites, although trails to park sites from the city are not always well marked.

Traffic and Parking

Automobile access to Golden Gate National Recreation Area park sites in San Francisco is generally good. While access to most park sites requires travel over San Francisco city streets, some of which can be congested during commuting hours, multiple access routes are available, and there are sizable parking lots available at almost every

location. These lots often become full at peak times.

Public Transit

In general, park sites in San Francisco enjoy the sort of frequent and extensive transit service that is rare in the national park system. All Golden Gate National Recreation Area park sites in San Francisco and the Alcatraz Island ferry are served at least indirectly by Muni light rail, historic streetcar, cable car, or bus routes operating on headways of 20 minutes or less from early morning until late in the evening.

Muni stops near Golden Gate National Recreation Area park sites, however, generally lack many amenities (including park-related signs or other wayfinding information). Muni vehicles are often crowded, especially at commute times, with 4.3% of morning peak period trips exceeding 125% of seating and standing capacity (San Francisco Municipal Transportation Agency 2009). Details of Muni routes serving Golden Gate National Recreation Area park sites can be found in appendix E.

A number of changes have been planned to Muni service that would impact access to Golden Gate National Recreation Area park sites. Some reductions in service have been implemented in response to a budget issues, but improvements in service are also planned, such as the Muni E-line extension. Other changes are detailed in appendix E.

Transit service to selected Golden Gate National Recreation Area park sites is also provided by the PresidiGO shuttle, operated by the Presidio Trust within the Presidio, with a downtown express shuttle connecting to regional transit, and by Golden Gate Transit from Marin County.

Bicycle

Bicycle access both to and within Golden Gate National Recreation Area park sites in San Francisco is good. Unlike in Marin and San Mateo counties, where steep grades and rough trail conditions make many routes accessible to only the most expert cyclist, San Francisco's bicycle system and the park sites offer opportunities for cyclists of all skill levels.

Designated bicycle routes, including on-street bike lanes and, in Golden Gate Park, off-street paths, connect to all Golden Gate National Recreation Area sites in San Francisco. An off-street multiuse trail runs along the northern waterfront from Aquatic Park to the Warming Hut at Crissy Field; from there it is a short distance to the Golden Gate Bridge, which features a dedicated bike path on its west side connecting cyclists to Golden Gate National Recreation Area park sites in Marin County. Additional paths and lanes can be found within the Presidio, and there are several multiuse trails at Lands End. A bike path constituting a segment of the Pacific Coast Bicycle Route runs on city land along nearly the entire 3.5-mile length of Ocean Beach, and there are numerous paved multiuse trails within Fort Funston.

Pedestrian

The uniquely urban context of park sites within San Francisco results in much greater pedestrian access than can be enjoyed at park sites in Marin and San Mateo counties. Streets leading to park sites typically include sidewalks, and the only obstacles to pedestrian access are distance, busy streets, and hills in some locations. However, all Golden Gate National Recreation Area park sites are along the city's waterfront, and thus most are at a lower elevation than the majority of pedestrian trip origins.

There are, however, some obstacles to pedestrian access. Fort Funston, in the city's southwestern corner, is relatively isolated, located west of Lake Merced and across the Great Highway and Skyline Boulevard from city streets. Pedestrian access to Ocean Beach requires crossing the Great Highway at signalized pedestrian crosswalks over a four-lane highway. All of the park sites in San

Francisco, however, are connected to each other by the Bay Trail and Coastal Trail, including segments that meet accessibility standards for people with disabilities.

Within park sites, pedestrian routes vary from sidewalks to paved paths, boardwalks, and unpaved trails. Accessibility for people with disabilities is much higher here than at park sites in Marin and San Mateo counties, where few paved, level paths exist.

Coastal Trail and Bay Trail improvements are planned as part of the Trails Forever initiative, a collaborative effort sponsored by the Golden Gate National Parks Conservancy, the National Park Service, and the Presidio Trust.

Summary

San Francisco park sites, uniquely situated within an urban environment, are generally connected to their surroundings by public transit and a network of streets, bike routes, and sidewalks. Parking is generally available, and there are extensive trail networks within the larger park area.

San Mateo County Park Lands

Just as Golden Gate National Recreation Area park sites in Marin County and in San Francisco share many characteristics in common that make them distinct from the park sites in other counties, park lands in San Mateo County are notable in a number of ways. They are generally less developed in terms of amenities, less used (although some park sites are popular with local residents), less connected to one another, and different in terms of their primary means of access. As in Marin County, private automobiles are the primary mode for access to Golden Gate National Recreation Area park sites in San Mateo County.

Directional and park identification signs, as well as parking at most park sites is limited, if they exist at all. The "typical" Golden Gate National Recreation Area site in San Mateo County consists of open space with trails of various qualities that are accessible from a trailhead, which either provides limited, informal parking, or no parking at all. Some park sites are relatively remote and inaccessible to pedestrians and transit users, while others are immediately adjacent to suburban neighborhoods and feature many "social" or informal entrances. Bicycle access is generally good, although some park sites do not accommodate cyclists and safer routes are needed along much of State Route 1 south of Pacifica.

Traffic and Parking

Automobile access to San Mateo park sites is generally good, although parking at trailheads can be in short supply or available only on an "informal" basis on nearby streets; also some roadways experience congestion.

Highways 1 and 280 provide primary access to most park sites, along with Highway 35, or Skyline Boulevard, which is a suburban arterial in its northern segment, near Milagra Ridge, and a two-lane rural road in the south, near Phleger Estate. Highway 92, Sharp Park Road, and other rural and suburban roadways also provide access to Golden Gate National Recreation Area park sites. State Route 1 experiences relatively high volumes of traffic (California Department of Transportation 2009).

A segment of State Route 1 between Pacifica and Montara, called Devil's Slide, has long been prone to landslides that have closed the road for periods of several months. This segment was replaced by an inland bypass including twin tunnels and bridges that opened in 2013. At that time, the existing segment of roadway will be converted to a multiuse California Coastal Trail segment extending north and south to connect to Golden Gate National Recreation Area and state park sites along the coastline.

Finally, data on parking demand is not available. However, at park sites in San Mateo County, parking is generally both limited and informal; in addition to trailhead lots at Milagra Ridge, Shelldance Nursery, and Sneath Lane, parking is found along roadsides, in neighborhoods, and in business parking lots. At Rancho Corral de Tierra, parking is associated with the equestrian facilities.

There are several parking areas that serve to access the park at adjacent college or state park parking lots.

Access to Phleger Estate is generally through Huddart County Park, which provides adequate parking on most days.

Public Transit

The San Mateo County Transit District, or SamTrans, provides bus service throughout the county. As San Mateo is a relatively low-density, suburban county, much of this service is relatively infrequent, operating on headways of 30 minutes to as much as 180 minutes, and some routes do not operate on weekends or mid-days, outside of normal commuting hours. Stops generally lack amenities, and pedestrian routes from stops to Golden Gate National Recreation Area park sites often lack sidewalks and directional signs. However, as many park sites in San Mateo County are immediately adjacent to neighborhoods, a few stops are within walking distance of Golden Gate National Recreation Area park sites. In general, SamTrans provides a fair level of service to Pacifica and Montara, including relatively frequent service to Mori Point and Milagra Ridge. Service to these two areas also connects to BART and operates seven days a week. Service to the Sawyer Camp and San Andreas trails, however, is limited to weekdays, and Phleger Estate is currently not served by transit. More information on SamTrans service can be found in appendix E.

Bicycle

Bicycle access to Golden Gate National Recreation Area park sites in San Mateo County is mixed; however, bicycle amenities within the park are generally good, as cyclists are allowed on most trails.

While most bicycle access is over roadways without separate bicycle facilities, a grade-separated, off-road bike path parallels State Route 1 along the Pacifica shoreline, connecting Pacifica State Beach just north of Point San Pedro to Rockaway State Beach and Mori Point. Another unpaved path runs north from Mori Point to Sharp Park Beach, and there are bike lanes along Sharp Park Road connecting to Milagra Ridge. Cañada Road, running south from the SFPUC watershed, is closed to motor vehicles for several hours on county-sponsored "Bicycle Sundays."

Milagra Ridge, meanwhile, features a paved loop within the site. The popular Sneath Lane Trail at Sweeney Ridge is paved, and the popular Sawyer Camp and San Andreas trails in the SFPUC watershed are primarily high capacity, paved, multiuse trails with median striping and mile markers. Bicycles are prohibited on trails within the Phleger Estate.

The *San Mateo County Bicycle Plan* proposes improvements to routes popular with cyclists, including Cañada Road, and while improvements are not planned, a route allowing bike access from the San Mateo County suburbs east of Interstate 280 to the road and mountain bike trails west of Skyline Boulevard has been identified as a priority for cyclists. This could require bicycle access in the vicinity of the Phleger Estate.

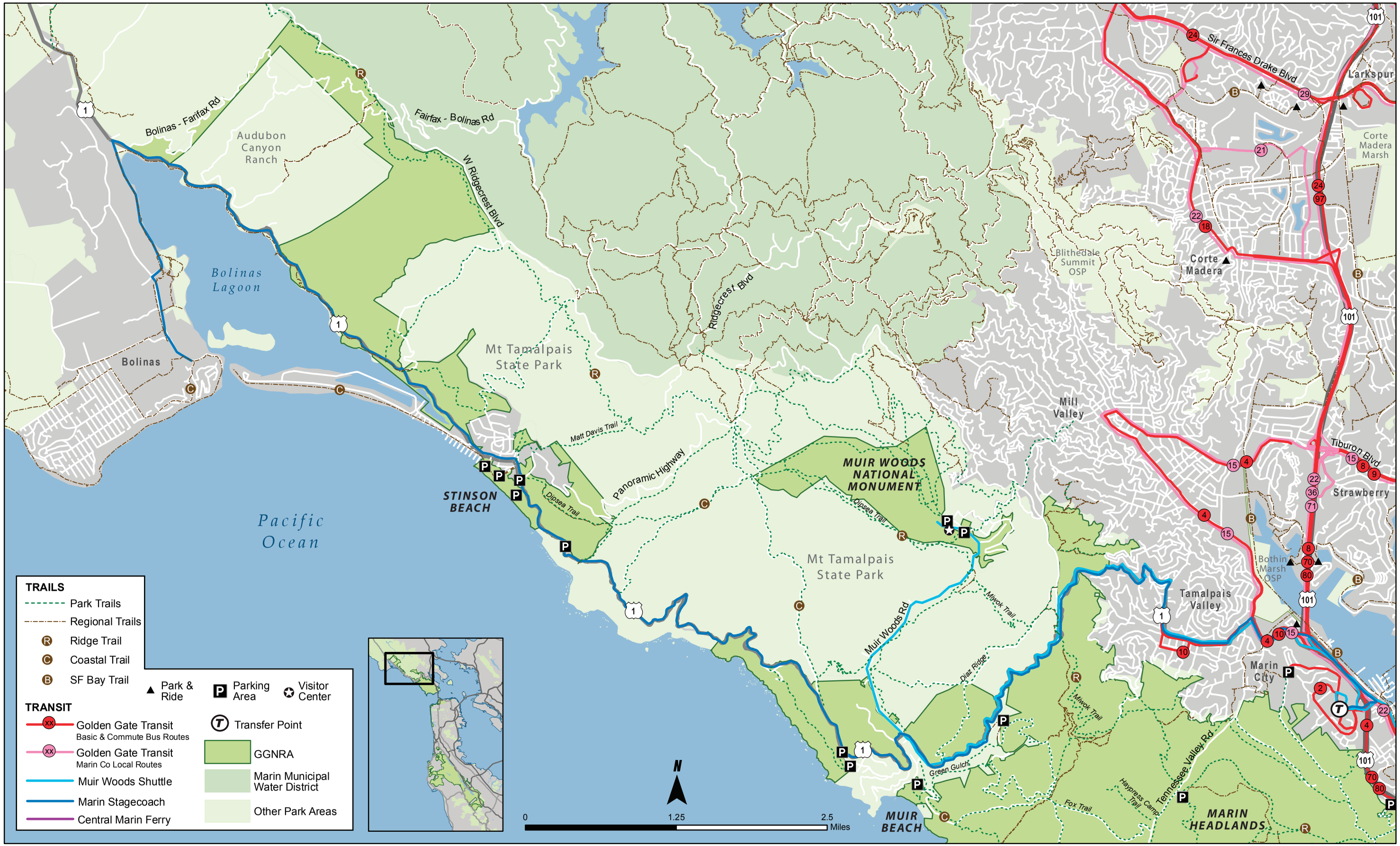
At Rancho Corral de Tierra, several miles of existing trails are primarily multiuse, though mostly steep and unpaved. The northern area of Rancho Corral de Tierra is connected to McNee Ranch State Park, by Old Pedro Mountain Road, a multiuse county trail that continues north to Pacifica.

Pedestrian

Pedestrian access to Golden Gate National Recreation Area park sites in San Mateo County is limited. Trailheads at a few park sites, such as Milagra Ridge, Sweeney Ridge, Mori Point, Point San Pedro, and Rancho Corral de Tierra, are adjacent to suburban neighborhoods and thus are relatively accessible to pedestrians (although sidewalks leading to the park sites are sometimes lacking). However, pedestrian circulation within San Mateo County park sites is in many cases very good, as most San Mateo County park sites are essentially open space preserves with trail networks. Also, two park sites, Rancho Corral de Tierra and Phleger Estate, offer extensive equestrian access. Trails within San Mateo County Golden Gate National Recreation Area park sites are detailed in appendix F.

Summary

San Mateo County park sites are generally adjacent to suburban developments and are easily accessible by automobile. However, they are not well served by public transit, which is oriented toward commuters. Bicycle access is generally good, and hiking is popular within the parks. While more discontinuous than park sites in Marin County or San Francisco, San Mateo County park sites are connected in part by both the California Coastal Trail and the Bay Area Ridge Trail. San Mateo park sites are also popular with equestrians, and there are many multiuse trails, with little conflict among users.



Nelson|Nygaard consulting associates

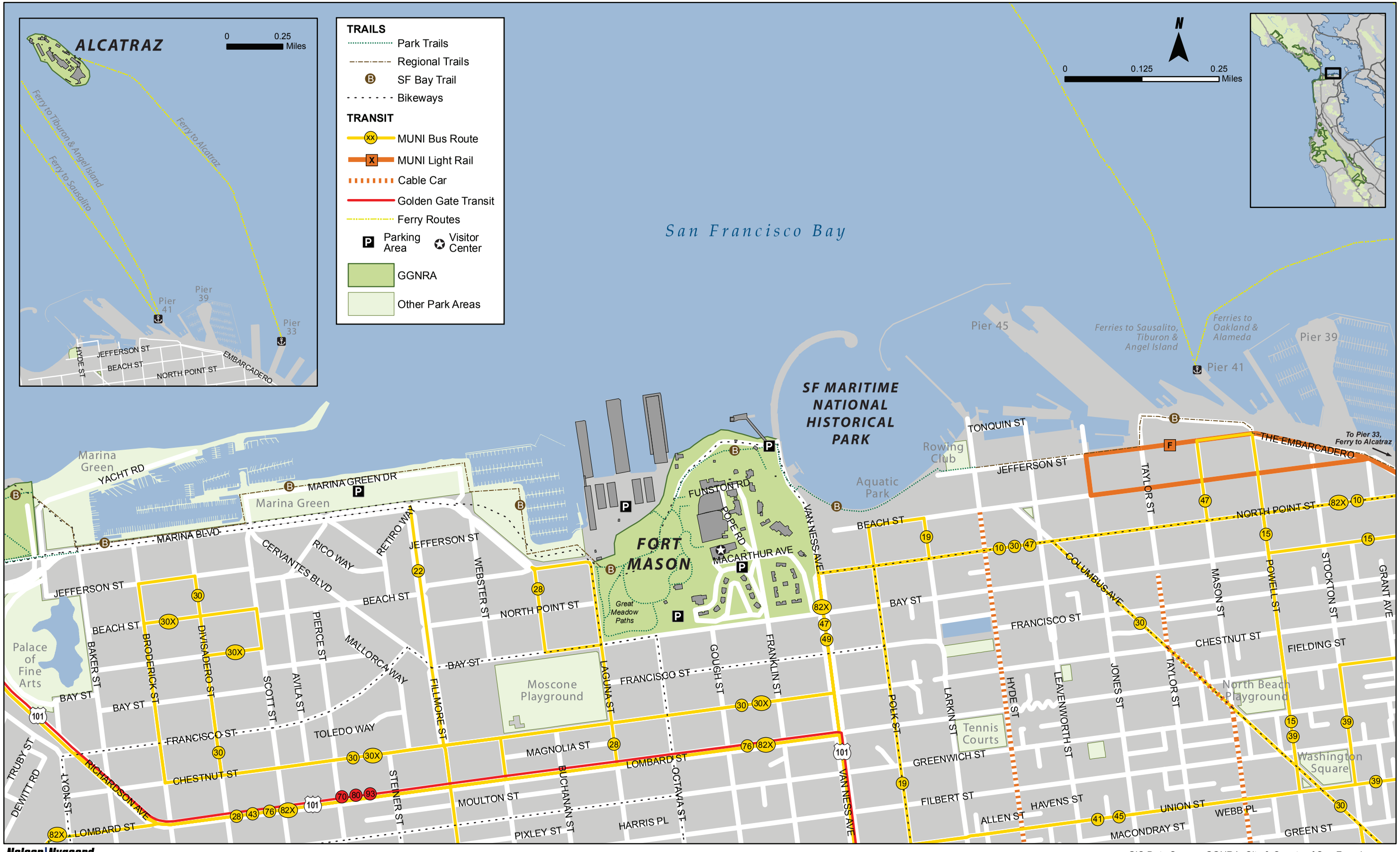
GIS Data Source: GGNRA, CASIL, Marin County, GreenInfo Network, MTC, MUNI, Golden Gate Transit

Map 6. Marin County Transportation Network: Muir Woods, Stinson Beach

Nelson\Nygaard consulting associates

GIS Data Source: GGNRA, CASIL, Marin County, GreenInfo Network, MTC, MUNI, Golden Gate Transit

Map 7. Marin County Transportation Network: Marin Headlands



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GIS Data Source: GGNRA, City & County of San Francisco, CASIL, GreenInfo Network, MTC, MUNI, Golden Gate Transit

Map 8. San Francisco Transportation Network: Fort Mason, Alcatraz

TRAILS
- Park Trails
- Regional Trails
- Ridge Trail
- Coastal Trail
- SF Bay Trail
- Bikeways

TRANSIT
- MUNI Bus Route
- Golden Gate Transit
- PresidiGo

P Parking Area · Visitor Center

GGNRA

Other Park Areas (including Presidio Trust)

0 0.25 0.5 Miles

N

FORT POINT NATIONAL HISTORIC SITE

San Francisco Bay

CRISSY FIELD

PRESIDIO

BAKER BEACH

CHINA BEACH

Pacific Ocean

San Francisco Military Cemetery

Presidio Golf Course

Mountain Lake Park

Palace of Fine Arts

Moscone Playground

Alta Plaza Park

Presidio Transit Center

MARINE DR

MAULDIN ST

MASON ST

OLD MASON ST

YACHT RD

MARINA GREEN DR

Marina Green

MARINA BLVD

JEFFERSON ST

PRADO ST

BEACH ST

NORTH POINT ST

BAY ST

FRANCISCO ST

CHESTNUT ST

LOMBARD ST

GREENWICH ST

FILBERT ST

UNION ST

BROADWAY

PACIFIC AVE

JACKSON ST

WASHINGTON ST

CLAY ST

SACRAMENTO ST

CALIFORNIA ST

PINE ST

BUSH ST

SUTTER ST

POST ST

GEARY BLVD

MAGNOLIA ST

MOULTON ST

PIXLEY ST

VALLEJO ST

GREEN ST

WILMOT ST

PERINE PL

RICO WAY

RETIRO WAY

WEBSTER ST

LAGUNA ST

BUCHANAN ST

FILLMORE ST

STEINER ST

PIERCE ST

SCOTT ST

DIVISADERO ST

BRODERICK ST

BAKER ST

AVILA ST

ALHAMBRA ST

LINCOLN AVE

GRAHAM ST

MONTGOMERY

TAYLOR RD

SHERIDAN AVE

BLISS ST

MORAGA AVE

KEYES AVE

MESA ST

FUNSTON AVE

HALLECK ST

GIRARD RD

EDIE RD

CORGAS AVE

O'REILLY AVE

TRUBY ST

DEWITT RD

LETTERMAN DR

SHERMAN RD

SIMONDS LOOP

BARNARD AVE

QUARRY ST

MACARTHUR AVE

PORTOLA ST

RODRIGUEZ ST

SANCHES ST

LIGGETT AVE

HARDIE PL

NAUMAN RD

PIPER LOOP

COMPTON RD

THOMAS AVE

MERCHANT RD

STOREY AVE

RALSTON AVE

MCDOWELL AVE

LONG AVE

KOBBE AVE

UPTON AVE

STILWELL RD

PERSHING DR

LINCOLN BLVD

BROOKS ST

GIBSON RD

SEACLIFF AVE

SCENIC WAY

HOWARD RD

LAKE ST

MOLAREN AVE

PARK BLVD

VETERANS BLVD

WYMAN AVE

FLYS ST

FUNSTON AVE

ARGUELLO BLVD

CHERRY ST

MAPLE ST

SPRUCE ST

LOCUST ST

LAUREL ST

WALNUT ST

LYON ST

PRESIDIO AVE

MAYFAIR DR

IRIS AVE

PARKER AVE

JORDAN AVE

PALM AVE

EUCLID AVE

LUPINE AVE

WOOD ST

CALIFORNIA ST

WEST PACIFIC AVE

31ST AVE · 30TH AVE · 29TH AVE · 28TH AVE · 27TH AVE · 26TH AVE · 25TH AVE · 24TH AVE · 23RD AVE · 22ND AVE · 21ST AVE · 20TH AVE · 19TH AVE · 18TH AVE · 17TH AVE · 16TH AVE · 15TH AVE · 14TH AVE · 12TH AVE · 11TH AVE · 10TH AVE · 9TH AVE · 8TH AVE · 7TH AVE · 6TH AVE · 5TH AVE · 4TH AVE · 3RD AVE · 2ND AVE

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GIS Data Source: GGNRA, CASIL, San Francisco County, GreenInfo Network, MTC, MUNI, Golden Gate Transit

Map 9. San Francisco Transportation Network: Baker Beach, Presidio, Crissy Field

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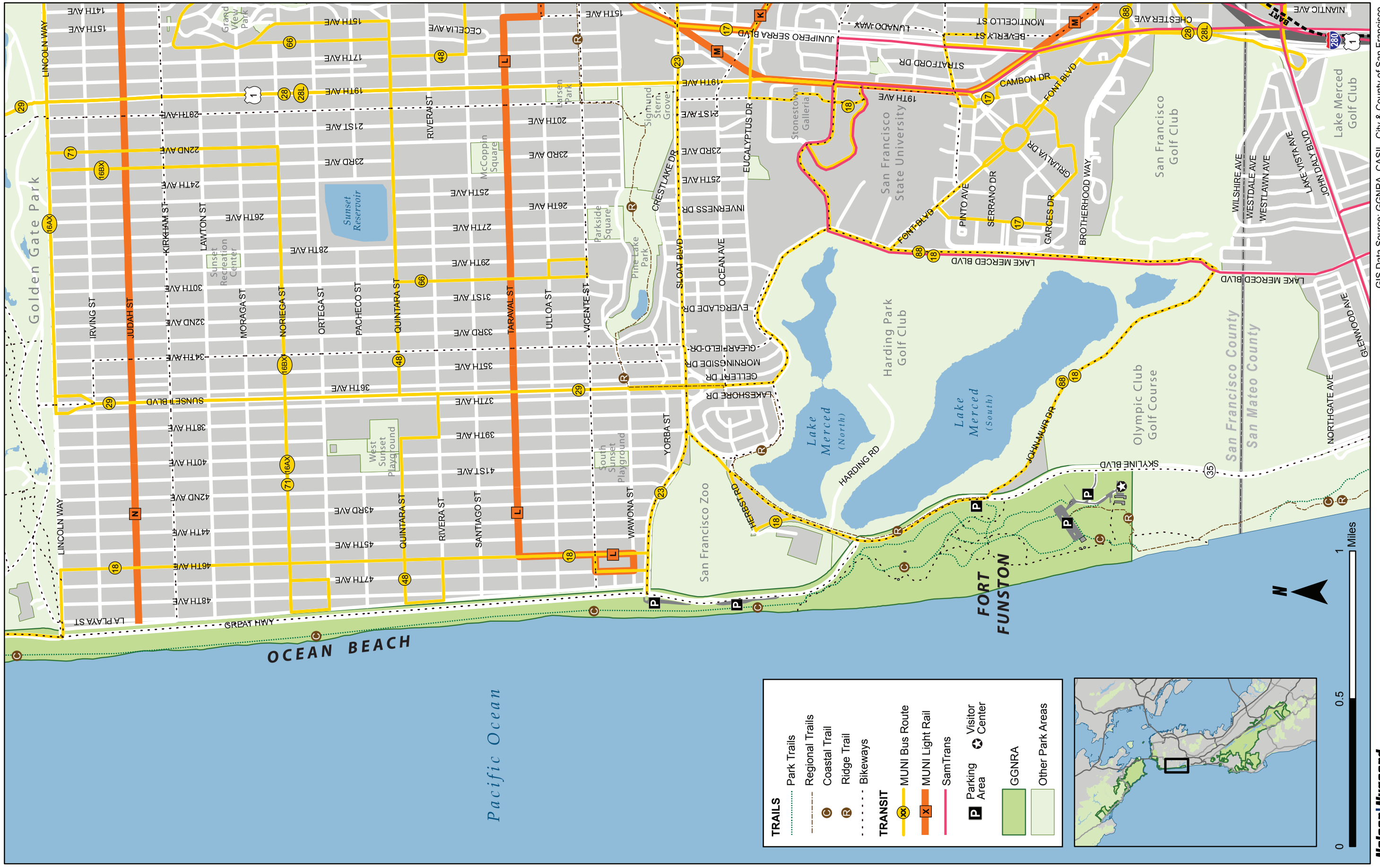
GIS Data Source: GGNRA, City & County of San Francisco, GreenInfo Network, MTC, MUNI, CASIL

Map 10. San Francisco Transportation Network: Lands End, Sutro Heights



GIS Data Source: GGNRA, CASIL, City & County of San Francisco, County of San Mateo, GreenInfo Network, MTC, MUNI, BART

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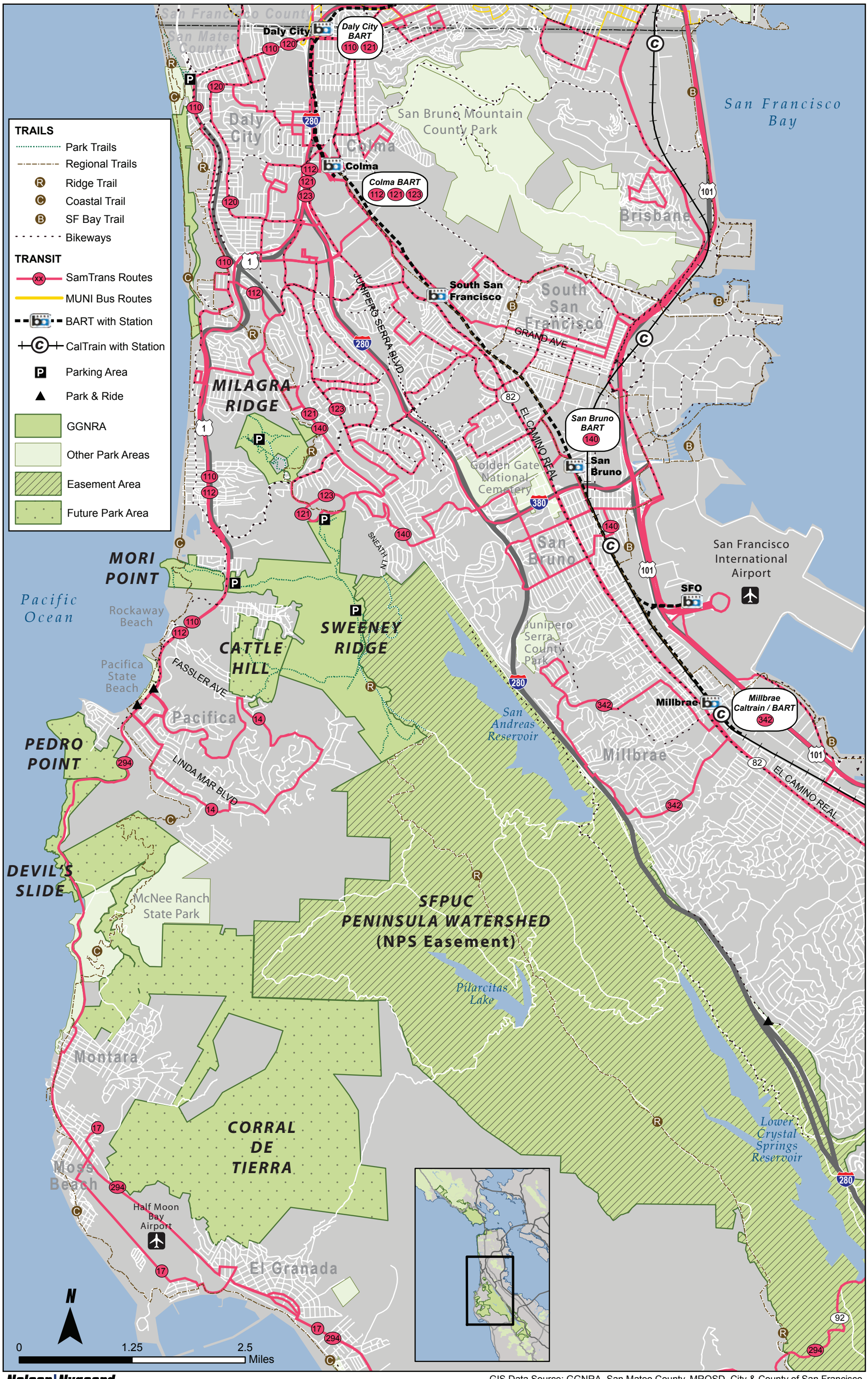
Map 11. San Francisco Transportation Network: Ocean Beach, Fort Funston

U.S. Department of the Interior - National Park Service - GGNRA 641 / 120026 (7 of 8)

Map 12. San Mateo County Transportation Network: Northern San Mateo County



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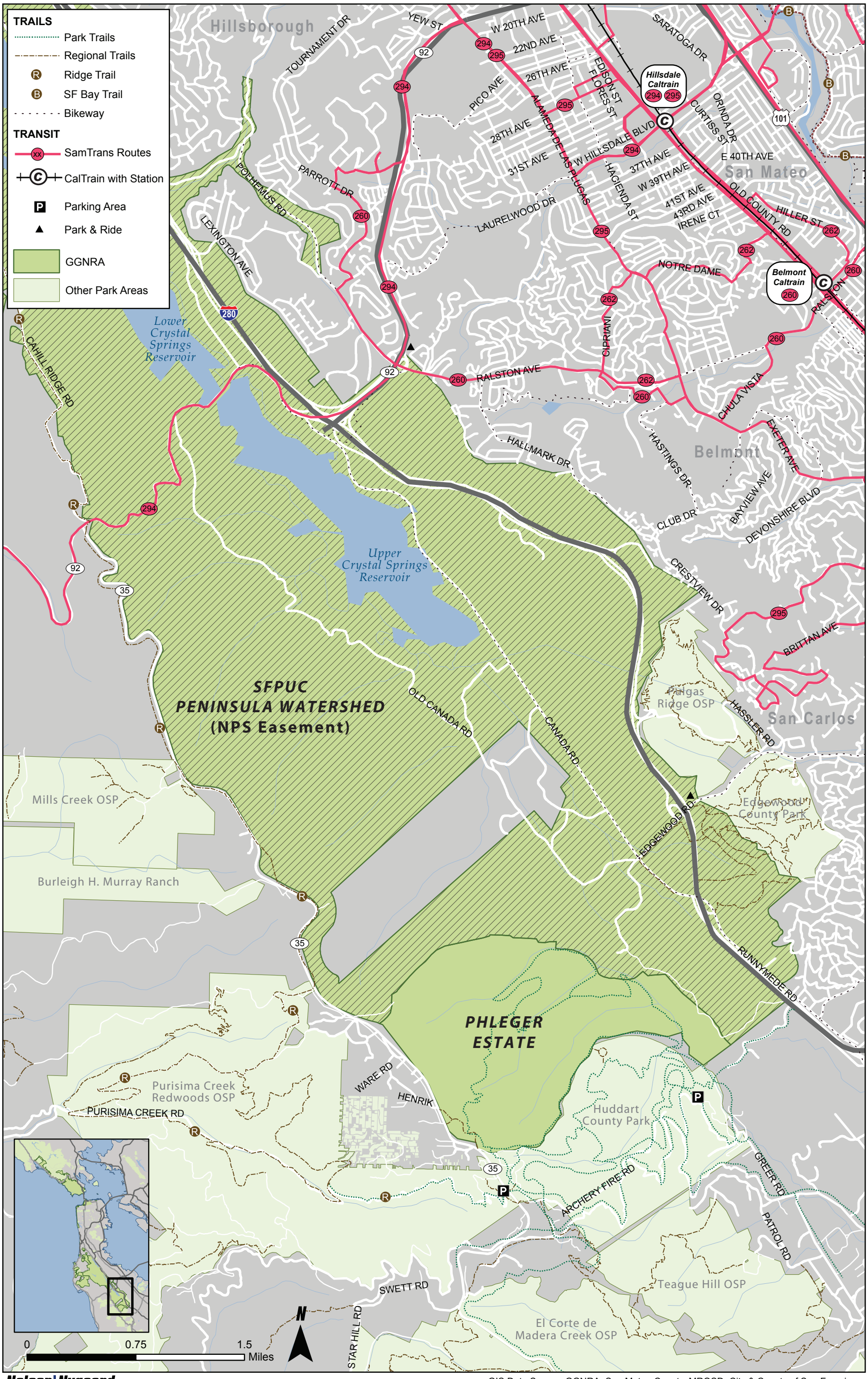
GIS Data Source: GGNRA, San Mateo County, MROSD, City & County of San Francisco, GreenInfo Network, MTC, SamTrans, MUNI, BART, CalTrain, CASIL

U.S. Department of the Interior - National Park Service - GGNRA 641 / 120026 (8 of 8)



Map 13. San Mateo County Transportation Network: Phleger Estate, SFPUC Watershed

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GIS Data Source: GGNRA, San Mateo County, MROSD, City & County of San Francisco, GreenInfo Network, MTC, SamTrans, MUNI, BART, CalTrain, CASIL

PARK MANAGEMENT, OPERATIONS, AND FACILITIES (INCLUDING GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT)

STAFFING

The park management team and staff are responsible for both Golden Gate National Recreation Area and Muir Woods National Monument. In 2009, the park was staffed by 335 full-time-equivalent (FTE) employees, which includes full-time, part-time, term, temporary, and student employment. The NPS staff is supplemented by the staff of the Golden Gate National Parks Conservancy, numerous park partners, and a large number of volunteers who fulfill critical roles within the operations and programming of the park and monument.

Office of the Superintendent

The office of the superintendent includes managerial activities of the superintendent, deputy superintendent, Public Affairs, and Strategic Planning and Initiatives, as well as administrative staffs. The deputy superintendent's office is responsible for a considerable portion of the park management including staff in the areas of administration, business management, cultural resources and museum management, interpretation and education, environmental and safety, maintenance, natural resources management and science, planning and compliance, visitor resources and protection and administration.

Planning, Projects, and Compliance

The Division of Planning is an assemblage of planning, environmental review, transportation, and design professionals who provide park management with the technical expertise and policy guidance needed to plan for preservation and protection of the park's natural and cultural resources, provide for appropriate public use, and manage public involvement in the planning and decision-making process. Planning staff work as a team with other park divisions, park partners, other agencies, and consultants to make this mission a reality.

Given the complexity of managing a large park unit adjacent to a high density, urban population, the project workload into the future is substantial. Adequate planning staff is critical for achieving the park's vision; maintaining positive relationships with the public; and meeting the high expectations set internally by the National Park Service and externally by the community. The park's ability to benefit from the philanthropic capacity of the Bay Area will continue to depend heavily on the park's ability to plan for and manage projects and programs funded by outside sources. Current funding provides about two-thirds of the needs for management and administration with the balance derived from external sources.

Cultural Resources and Museum Management Division

This division oversees management of more than 263 inventoried archeological sites, some of which predate European contact and constitute the most tangible connection between the Coast Miwok and Ohlone communities and park lands, and more than 700 historic structures, most of which related to military and maritime commercial themes stretching over a period of more than 200 years. The park includes 5 national historic landmarks, 12 properties listed in the National Register of Historic Places, and 7 properties determined eligible for national register listing; 9 documented cultural landscapes, including rural landscapes and dairy ranches;

and 4.2 million items in museum collections. The staff for this division includes authorization for 16 FTE employees, however, 5 key positions (3 historical and landscape architects, 1 archeologist and 1 compliance assistant) are not permanent-full and dependent on funding levels. The division is working toward documenting baseline conditions of all park cultural resources in an effort to guide future operations and programs. Volunteers are necessary to support the park staff, given the large number, diversity, and significance of the park's cultural resources.

Environmental and Safety Division

This group is responsible for environmental protection and occupational health and safety; the staff consists of 1% of the total park workforce. The division manages the park's sustainability programs and is central to addressing carbon emissions mitigation. Minimizing the park's environmental impact and movement toward being climate neutral are core responsibilities of the division. The group also manages comprehensive water and energy conservation programs, reduced fossil fuel consumption, sustainable waste management, hazardous and universal waste management, air permits, hazardous materials, and hazardous waste remediation projects.

Facility Operations and Maintenance Division

The Operations and Maintenance Division is responsible for ensuring the physical integrity of park assets and infrastructure. Facility management includes responsibility for buildings, utilities, roads, trails, grounds, housing, and project management. The park staff maintains over $150 billion worth of structures and infrastructure. One-third of park staff work in the division. This workforce includes electricians, gardeners, engineering equipment operators, and other specialists that work to ensure the parks are safe and prepared for visitors.

Responsibilities are divided geographically, as well as by asset type: trails, roads, housing, buildings, and utilities. Project management and special fund source projects also have separate groups. Nearly half of the park building square footage is occupied by park partners in exchange for assuming building maintenance and other responsibilities. Further, in 2009, park volunteers provided 24,500 hours of support toward maintenance projects, mostly trail projects. Despite creative approaches in supplementing the work of park staff, the workload needed to maintain and support the park assets exceeds the available staff resources, resulting in a significant maintenance backlog. The maintenance of aging infrastructure within the park requires increasing resources and results in increased operational and environmental risks. A majority of the maintenance needs annually go unmet due to insufficient funding, which results in an increasing backlog of deferred maintenance.

Visitor and Resource Protection Division

This group includes responsibilities for law enforcement, structural fire suppression, and wildland fire control. Safety services are particularly unique within the park due to its urban location, its large area, and the variety of water and land-based recreation that occurs within the park. The staff in this division make up 30% of the total staff for the park. Law enforcement and the U.S. Park Police are responsible for enforcing law and protecting the public's safety. Law enforcement staff is organized into several geographic areas north and south of the Golden Gate Bridge. Patrol operations are conducted in marked and unmarked police cruisers, motorcycles, bicycles, on foot, horseback, and with all-terrain vehicles, although a lack of sufficient patrolling units has resulted in adverse impacts on the park's resources.

Safety services include search and rescue, emergency medical services, and structural

and wildland firefighting. The structural fire department also includes paramedic support and lifeguards. Wildland fires are managed by a staff of nine. The Office of Fire Management monitors and responds to all wildland fires within the park and maintains an appropriate preparedness level in accordance with the park's 2006 fire management plan. Structural fires within the San Francisco portions of the park and in the Presidio are handled by the San Francisco Fire Department. The Golden Gate National Recreation Area's Fire Management Program is part of the San Francisco Bay Area Network. Fire staff based at Golden Gate National Recreation Area also serve Point Reyes National Seashore, John Muir National Historic Site, Eugene O'Neil National Historic Site, and Pinnacles National Monument. Professional lifeguards are at Stinson Beach and patrol units cover the 6-mile stretch of Ocean Beach. A small park horse patrol, using three or four NPS horses, is managed by division staff, with over 7,200 volunteer hours provided in 2009.

Interpretation and Education Division

The Interpretation and Education Division aims to connect people to their parks. The division includes Community Outreach, Education Programs, and the Volunteers-In-Parks Program, and provides staff for specific interpretation services throughout Golden Gate National Recreation Area, Fort Point National Historic Site, and Muir Woods National Monument. Staff in this division make up 10% of the park's workforce, which includes permanent and term staff as well as students. The interpretation and education division has the responsibility of communicating the value and significance of the park and monument's resources to the public through signs, exhibits, brochures, ranger-led programs, and audio tours. Interpretation programs are offered at Alcatraz Island, Muir Woods National Monument, Fort Point National Historic Site, the Presidio, Fort Funston, the Sutro District, Marin Headlands, San Mateo County, the Crissy Field Center, and other locations throughout the park. Community Outreach staff are responsible for managing communications and outreach to the local community.

Education Programs staff deliver formal curriculum-based educational programs to approximately 20,000 Bay Area children annually on topics including habitat restoration, invasive species, marine biology, plate tectonics, geology formations, and day-to-day life at Fort Point National Historic Site. The Volunteers-In-Parks program manages thousands of volunteers who contribute over 300,000 hours annually to park programs.

The demand for education and interpretive programs far exceeds what the park is currently able to deliver. Many valuable resources within the park and monument are not interpreted due to limited staff and funding for program development. Park partners such as the Bay Area Discovery Museum, Headlands Institute, Marine Mammal Center, Point Bonita YMCA, and Slide Ranch assist in meeting the public's demand for educational and interpretive programs; however, a considerable gap remains between park offerings and the public demand.

Natural Resources Management and Sciences Division

The Natural Resources Division includes responsibility for protection of a diverse array of aquatic, vegetation, wildlife, and physical resources. The park's 80,500 acres of land and water extend from Tomales Bay in Marin County south into San Mateo County. Division staff manages the park's ecosystems and numerous plant and animal species, including many sensitive, rare, threatened, or endangered species. With only 4% of the park's total staff working in the division, including base-funded and project-funded staff, the division's work is further supported by specialists from the Golden Gate National Parks Conservancy and by Volunteers-In-Parks natural resource stewards. Current

staffing levels prevent the park from completing the baseline studies and monitoring necessary to guide the park's natural resources preservation efforts in the future. The division is central in addressing the effects of climate change on park resources and habitats.

Management, Administration, and Business Services

This division makes up 15% of the park's staff and is responsible for integrating operations and organizational support across the park. The staff consists of personnel in Administration, Budget and Finance, Contracting and Procurement, Fee Collection, Human Resources, Information Technology, Public Affairs and Special Events, the Superintendent's Office, and the Office of Strategic Planning. The Business Management office oversees complex contracts and partnership agreements that provide key services within the park. The division also manages leases, concessions, and the legal aspects of park and partner projects, including property easements, encroachments, and acquisition of new lands.

PARTNERS AND OTHER ENTITIES

The Volunteer-In-Parks program is critical to the ongoing operation of Golden Gate National Recreation Area and Muir Woods National Monument. Volunteers provide between 300,000 and 400,000 volunteer hours to various programs and efforts within the park in a typical year. However, due to staff limitations to manage volunteer efforts, the volunteer program does not have the capacity to grow and provide additional benefit to the parks.

As a park partner for more than 24 years, the nonprofit Golden Gate National Parks Conservancy has provided more than $80 million in assistance to the park and monument. This organization provides support with education and interpretation programs and with the protection of natural and cultural resources; the Golden Gate National Parks Conservancy also collaborates with the National Park Service with visitor program partnerships, including the Crissy Field Center and the Institute of the Golden Gate. The organization has been instrumental in facilitating visitor enhancements throughout the park, including the spectacular transformation of Crissy Field, improvements to Alcatraz Island, and the successful Trails Forever program.

In addition to programs offered by the National Park Service, park visitors can enjoy programs provided by a number of nonprofit organizations in facilities owned by the National Park Service. There are many other excellent park partners who provide conservation restoration and protection, environmental education, outreach programs, and recreational opportunities that support the goals of the park while achieving their own organization's missions.

Many of the parks' better known partners are in the Marin Headlands, just north of the Golden Gate Bridge. These include the Marine Mammal Center, Headlands Institute (a part of NatureBridge), Bay Area Discovery Museum, Headlands Center for the Arts, Point Bonita YMCA, and Hostelling International. The Fort Mason Center houses 23 nonprofit organizations and provides meeting, exhibit, recreation, and performance space in 11 historic landmark buildings. Alcatraz Cruises LLC (a part of Hornblower Cruises and Events) brings visitors to and from the island. The park staff continues to explore new partnerships and to improve ways to nurture and sustain them to extend ongoing collaborations.

PARK FACILITIES

The large size of Golden Gate National Recreation Area and Muir Woods National Monument, in combination with the diversity of natural and cultural resources and the history of land use, makes for numerous

facilities to be maintained and managed. The park lands contain approximately 1,150 total facilities that include buildings, trails, roads, and other structures and landscapes.

The park has been at the forefront of asset management planning, and has creatively found ways to adaptively reuse historic buildings, to lease space to park partners, and to prioritize funding toward most needed maintenance and deferred maintenance. Sustainability goals are being incorporated into facility and systems construction. The park has also proactively worked with partners to obtain outside funding for projects.

TABLE 12. THE GOLDEN GATE NATIONAL RECREATION AREA PORTFOLIO SUMMARIZED BY RECORD COUNT FOR VARIOUS ASSET TYPES

Asset Type	NPS	Partner	Total
Historic Buildings	142	88	230
Nonhistoric Buildings	105	117	222
Maintained Landscapes	35	1	36
Trails	146	1	147
Paved and Unpaved Roads	215	1	216
Parking Lots	113	0	113
Water Systems	16	2	18
Wastewater Systems	13	2	15
Other Assets	187	4	191

Note: Many of the park's historic assets such as archeological sites and cultural landscapes are described in the "Cultural Resources" section.

Historic and Nonhistoric Buildings

Nearly half of the buildings within park lands are historic, carrying special consideration for maintenance. A significant number of buildings are managed and maintained by the partner organizations occupying them.

Maintained Landscapes

The park maintains landscapes for public use, such as the grounds surrounding buildings. The Upper Fort Mason grounds and the Alcatraz Island gardens are examples.

Trails, Roads, and Parking

The staff maintains paved and unpaved roads throughout the park. Roads need continual maintenance in which lack of funding reduces the ability to maintain them at an optimum level.

The park maintains extensive trail networks. Additional trails will be coming into park management with the acquisition of new areas in San Mateo County. The park has an extensive trails network, which is heavily used due to the urban park setting. This requires diligent maintenance; it is a challenge to find funding sources to support the necessary

work. Park partners assist in this area through donations.

The park maintains 113 parking lots, which range in size, and serve many of the major sites.

Utilities

Water and wastewater capacity are critical to all sites within the park lands. System needs vary over time and can be stressed by increases in use as well as the age and level of maintenance. Planning for utilities is critical in order to ensure excellence in operational effectiveness, sustainability, and conservation. Current water and wastewater system constraints occur at Alcatraz Island and Stinson Beach. Several systems are antiquated and many are failing and require constant maintenance. Replacement of these systems is a high priority.

Park Operations, Maintenance, and Public Safety Facilities

Park operations, maintenance, and public safety functions are presently scattered throughout the park at sites and facilities that were not intended for these uses. Staff carrying out these functions have been forced to adapt to conditions that do not adequately meet their space, size, function, mobility, and security requirements. Maintenance and public safety operations have moved numerous times over a short period, requiring staff to reprogram their operations; this has resulted in operational inefficiencies. Ideally, park maintenance and public safety staff would have adequate space for both personnel and facilities with appropriate access to various park units. Additionally, sheltered space for a variety of equipment is needed for equipment protection and efficient operations.

Park Maintenance Facilities

For efficient operations, park maintenance staff require secured vehicle parking, ability to receive cell and radio transmissions, access to arterial roads and highways for moving equipment, and ideally access to transit for ease of access for staff. Many of these criteria are not currently met by the existing facilities. Given the coastal climate, with its salt air and blowing sand, equipment life is substantially shortened by storage outdoors or in unenclosed shelters. Currently, there is inadequate enclosed storage for maintenance equipment within the park (table 13).

TABLE 13. MAINTENANCE FACILITIES

Location	Description
Muir Woods National Monument	
	Park maintenance is supported by a small office in the Administration-Concession Building, maintenance operations in the Old Inn, and facilities at Lower Conlon Avenue. These spaces support trail maintenance, building maintenance, and office space. A maintenance yard is adjacent to Muir Woods Road near Conlon Avenue.
Marin County	
Stinson Beach	Four modular buildings for offices, a workshop, and storage.
Tennessee Valley	Barn used for the storage of trail maintenance supplies and shared with the park horse patrol.

TABLE 13. MAINTENANCE FACILITIES

Location	Description
Nike Missile Launch Site	Maintenance yard, road maintenance operations, and for storage of fill materials.
Fort Baker	Buildings and utilities shop and parking for vehicles and equipment (the building is temporary and scheduled for demolition to provide space for visitor parking).
Fort Cronkhite	Grounds maintenance operations, a sign shop, offices, and storage.
San Francisco County	
Alcatraz Island	Park operations and maintenance facilities within former prison buildings.
Upper Fort Mason	Grounds maintenance operations and administrative offices.
East Fort Miley	A small onsite maintenance facility, heavy vehicle repairs, office space and shops on the east side in a warehouse and battery.
Fort Funston	Park maintenance support is in former military structures.
The Presidio	Additional maintenance functions and storage.
San Mateo County	
Shelldance Nursery	Vehicle storage.
Native Plant Nurseries	Small native plant nurseries are at Tennessee Valley, Marin Headlands, and adjacent to Muir Woods Road in Marin County and at Fort Funston in San Francisco County. Another native plant nursery is in the Presidio. The National Park Service, Presidio Trust, and the Golden Gate National Parks Conservancy cooperate in its use and management. All nurseries serve as volunteer stewardship centers and facilitate significant volunteer contributions to the parks natural resource and restoration programs.

Public Safety Facilities

Currently, public safety staff shares space with other divisions throughout the park. This is less than ideal because there are certain public safety functions that need to be exclusive and secured. Further, efficient operation requires adequate space for training and meetings, visibility to the public for reporting incidents, adequate cell and radio coverage, and access to public transportation for staff. Current public safety facilities do not meet these requirements in each location, and reassignment of space for public safety is desirable.

Within Marin County, the park's public safety program has an office at Stinson Beach that provides space for law enforcement, water safety, and seasonal emergency medical services staff, along with storage. Fort Cronkhite Building 1056 is the main, parkwide law enforcement office. The small park horse patrol is at lower Tennessee Valley.

The park's public safety office in San Francisco County includes Presidio Building 223, Fort Miley and Upper Fort Mason, Fort Funston, and lifeguard operations at China Beach. The Alcatraz Island public safety office is housed in Building 64, the historic barracks on the north end of the island.

The public safety staff at Muir Woods National Monument is in the Administration-Concession Building.

Residential Facilities

The park continues to provide some limited housing for employees. The park staff manages park housing units in the Marin Headlands. Housing in the San Francisco Bay Area is among the most expensive in the United States. Recruitment and retention of employees for both the park and park partners are hindered by the expense of housing in the area and low number of available park housing units.

ASSET MANAGEMENT

With a large number of facilities and constrained funding, the park staff strives to address the challenge of maintaining assets in acceptable condition and sustaining them over time. Park staff is responsible for maintaining nearly 1,150 assets; base funding of $5.3 million covers only a portion of the annual operations and maintenance requirements of $24.6 million.

For the same NPS-occupied and NPS-maintained assets, annual special project funding of approximately $6.0 million covers only a small portion of its $148.8 million in deferred maintenance backlog. Including the park assets managed by park partners, total documented park deferred maintenance exceeds $198.1 million.

In 2006, the park staff developed one of the first park asset management plans to describe its asset inventory, summarize its current budget, communicate funding requirements, and provide strategies to better manage assets that are essential to park operations and to high-quality visitor experience. This document was updated in 2009.

Operations and Maintenance Funding Priorities

Assets maintained and managed by the park's maintenance division (e.g., nonpartner assets) were categorized into priority levels based on a variety of factors. Those factors include the importance of the assets to the mission of the park and the recognized level of maintenance needed to keep the assets operational to suit their intended functions. Funding is then directed toward the highest priority assets, while lower priority assets will be maintained to the best level that limited available funding allows. However, even with prioritization, there remains $2.9 million in priority band 1 and 2 assets that would remain unfunded and therefore represent the most pressing unfunded needs for operations and maintenance (see table 14).

Partner Assets

Roughly one-half of all park buildings are affiliated with partners or concessioners. While the park shares maintenance responsibility for many of these assets, most of the concession and partner facilities are under contractual arrangements. The park asset management plan has identified some specific funding needs and issues for key park partners; with new draft maintenance plans in place, park management can now follow-up with partners to clearly communicate recommendations for best addressing needed maintenance. The goal is for the park staff to help its partners identify and address maintenance needs in a way that sustains the overall asset portfolio in support of the park mission.

TABLE 14. GOLDEN GATE NATIONAL RECREATION AREAS OPERATION AND MAINTENANCE PLANNED FUNDING

O&M* Optimizer Priority Band	Asset Count	Base O&M Allocations	O&M Benchmarks	Percent Coverage	O&M Funding Gap
Highest Priority	81	$3,561,497	$5,148,089	69%	$1,586,592**
High Priority	133	$1,012,566	$2,405,661	42%	$1,393,095**
Medium Priority	132	$545,513	$2,298,316	24%	$ 1,752,803
Lower Priority	290	$200,043	$7,987,277	3%	$ 7,787,234
Lowest Priority	276	$718	$6,781,986	0%	$ 6,781,268
Totals	**912**	**$5,320,337**	**$24,621,329**	**22%**	**$ 19,300,992**

*Operation and Maintenance

**Gap for bands 1–2: $2,979,687

Removal of Assets

Removing unneeded assets that are not mission-related is essential to keeping the portfolio a manageable size and allowing available funding to be spent on a smaller pool of higher priority assets. In developing the GMP alternatives, the park staff identified potential assets that could be disposed of over the life of the plan. The facilities identified through this process generally consist of nonhistoric structures in poor condition with no mission-related use existing or planned.

Addressing Deferred Maintenance

Recognizing that the park cannot reasonably address all of its deferred maintenance in the short run, the park has a schedule of facility projects that extends out 10 years; this plan addresses the highest priority assets and most critical equipment needs. The condition of these more important assets will show the most rapid improvement, measured by the facility condition index. If 100% of project funding were applied to critical needs and projected component renewal, the park would stabilize the condition of the critical components of its portfolio.

The GMP process has also identified deferred maintenance savings that would be achieved by taking the actions proposed in the alternatives. Deferred maintenance issues can be addressed through several actions recommended in the general management plan, including removal, stabilization, restoration, renovation, and preservation of facilities. The park is pursuing a reduction in deferred maintenance through other funding methods as well, such as the use of historic leasing as a source of funds to reinvest in historic structures, pursuing Federal Land and Highway Program funds, pursuing annual special project funds, using a portion of proceeds from concession franchise fee funds, and dedicating some repair and maintenance funds for component renewal. The park will also continue to look for opportunities to work with partners in addressing deferred maintenance when updating or issuing new partner agreements.

TABLE 15. PROJECT FUNDING AND DEFERRED MAINTENANCE

Type of Funding	Amount
Estimated Annual Special Project Funding	$6.0 million
NPS Deferred Maintenance	$148.8 million
Combined NPS and Partner Deferred Maintenance	$198.1 million

Sustainability

In a "funding-constrained" world, it is also extremely helpful for the park to identify more efficient ways of operating and managing its assets. The park staff has identified goals for achieving a higher level of sustainability, including managing and tracking energy performance, using renewable fuels, conserving water at high use areas, and continuing to enact best practices in waste management. The park managers also recognize the need to broadly communicate sustainability goals with park staff and to collaborate with park partners. These measures are opportunities for the park to find cost savings and become more fiscally responsible.

Coordination between the General Management Plan and the Park Asset Management Plan

Asset data from the park asset management plan helped to inform the development of the GMP alternatives. The updates of the park asset management plan, in light of the planning process for the general management plan, provide an extraordinary opportunity for park managers to promote sound asset management principles, incorporate the value and objectives of partnership relationships, and advance sustainability goals in a coordinated manner.

Potential Environmental Consequences 10

INTRODUCTION

The National Environmental Policy Act requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided. In this case, the proposed federal action would be the adoption of a general management plan for Golden Gate National Recreation Area and Muir Woods National Monument. This section analyzes the potential environmental impacts on natural resources, cultural resources, visitor use and experience, the social and economic environment, transportation, and NPS operations and management that could result from implementing the four alternatives.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions are analyzed in general, qualitative terms. Thus, this environmental impact statement should be considered a programmatic analysis. For the purposes of analysis, it is assumed that all of the specific actions proposed in the alternatives would occur during the life of the plan.

This environmental impact statement generally analyzes several actions, such as the development of recreational facilities (including trails and trailheads), the construction of facilities for visitor orientation and NPS operations, and the maintenance or restoration of natural and cultural resources. If and when proposed site-specific developments or other actions are ready for implementation following the approval of the general management plan, appropriate detailed environmental and cultural compliance documentation would be prepared. This compliance would be in accordance with the National Environmental Policy Act of 1969 and the National Historic Preservation Act of 1966, both as amended, and would meet requirements to identify and analyze each possible impact for the resources affected.

This section begins with a description of the methods and assumptions used for each impact topic. Impact analyses are organized by impact topic and then by alternative. The existing conditions for all of the impact topics that are analyzed were identified in part 8 of this document. All of the impact topics retained for detailed analysis are assessed for each alternative.

The analysis of the no-action alternative (continue current management) identifies the future conditions at Golden Gate National Recreation Area and Muir Woods National Monument if there are no major changes to facilities or NPS management direction other than those included in existing approved plans; the no-action alternative assumes implementation of existing approved plans. The three action alternatives are then compared to the no-action alternative to identify the incremental changes that would occur as a result of changes in park facilities, uses, and management. Impacts of recent decisions and approved plans, such as those identified in part 1 of this document, are not evaluated as part of this environmental analysis, except as part of cumulative impact analysis when appropriate. Although these actions would occur during the life of the general management plan, they have been (or would be) evaluated in other environmental documents.

The key impacts of each alternative are briefly summarized in volume 1 of this document. When this project is considered in conjunction with other projects and actions occurring in the region, impacts can become cumulative. The discussion of cumulative impacts is presented separately in “Part 11: Other Analyses and Statutory Considerations.”

METHODS AND ASSUMPTIONS FOR ANALYZING POTENTIAL IMPACTS

The planning team based the impact analysis and the conclusions in this part mostly on the review of existing literature and studies, other environmental documentation completed for the park, information provided by experts in the National Park Service and in other agencies, and staff insights and professional judgment. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed assuming that mitigation measures will be implemented to minimize or avoid impacts (see volume I, part 7 for mitigation measures). If mitigation measures were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

The environmental consequences for each impact topic were identified and characterized based on impact type (adverse or beneficial), intensity, context, and duration. Cumulative effects are discussed in part 11.

Impact intensity refers to the degree or magnitude to which a resource would be beneficially or adversely affected. Each impact was identified as negligible, minor, moderate, or major, in conformance with the definitions for these classifications provided for each impact topic. Because this is a programmatic document, the intensities were expressed qualitatively.

Context refers to the setting within which an impact may occur, such as the affected region or locality. In this document most impacts are either localized (site specific) or parkwide.

Impact duration refers to how long an impact would last. The planning horizon for this plan is approximately 20 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts:

Short Term: The impact would be temporary in nature, lasting one to three years or less, such as the impacts associated with construction and/or disruption of visitor use to an area of the park.

Long Term*:* The impact would last more than three years and could be permanent in nature, such as the loss of soil due to the construction of a new facility. Although an impact may only occur for a short duration at one time, if it occurs regularly over a longer period of time the impact may be considered to be a long-term impact. For example, the noise from a vehicle driving on a road would be heard for a short time and intermittently, but because vehicles would be driving the same road throughout the 20-year life of the plan, the impact on the natural soundscape would be considered to be long term.

Effects also can be direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. This document discloses and analyzes both direct and indirect effects, but does not differentiate between them in the discussions.

Discussion of the impacts of the action alternatives describe the difference between implementing the no-action alternative and implementing the action alternatives. To understand a complete "picture" of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur in the no-action alternative.

NATURAL RESOURCES

The analysis of natural resources was based on research, knowledge of the area's resources,

and the best professional judgment of planners and resource specialists, who have experience with similar types of projects. The definitions for impact intensity of all impact topics are included in this section under the impact topics; additional considerations used in characterizing the severity or intensity, as well as the duration, of certain impact topics are also discussed.

Impacts are determined by comparing projected changes resulting from the action alternatives (alternatives 1, 2, and 3) to the no-action alternative (continue current management). For all impact topics the analysis and conclusion sections are conducted at the parkwide level supported by discussion specific to the counties or to individual planning areas/sites where the impacts differ from those identified at the parkwide level. For example, for vegetation and wildlife, a parkwide analysis of the impacts of the alternatives would appear first, followed by specific discussions for Marin County and at two sites, Stinson Beach and Rodeo Valley, where impacts on vegetation and wildlife differ from those described at the parkwide level. A description of the impacts at the county level or at individual planning areas or sites would occur only when they differ from the parkwide analysis and conclusions.

Carbon Footprint and Air Quality

The park's contribution to global climate change is evaluated by assessing the relative production of greenhouse gases (CO_2) for each of the alternatives. Certain actions included in the alternatives of the plan would have an effect on the parks' total greenhouse gas emissions, known as the carbon footprint. Because some of the actions, such as the construction of new facilities could increase CO_2 emissions, and other actions, such as providing alternative transportation and reducing visitor dependency on personal automobiles, could reduce CO_2 emissions, it is important to evaluate the impact that these actions could have on global warming.

Although the National Park Service would pursue sustainable practices whenever possible in all decisions regarding operations, facilities management, and development in the parks, and the parks' focus on using renewable energy is a continuation of current management trends, the changes in energy consumption, energy availability, or costs compared to current conditions is of interest to NPS managers and the public.

The analysis of the effects of the actions contained in this plan on the parks' carbon footprint is based on a comparison with existing conditions. The baseline that is used for comparison is the carbon footprint of the no-action alternative, which is included in the "Natural Resources – Golden Gate National Recreation Area" section of part 8. The park staff inventoried its emissions in 2006 as part of their *Climate Change Action Plan* using the NPS and EPA CLIP tool. The CLIP tool converts emissions of various greenhouse gases into a common "metric tons of carbon equivalent" unit, which provides a basis for comparison among gases and simplifies reduction tracking. The conversion of a greenhouse gas to metric tons of carbon equivalent is based upon how strongly that particular gas contributes to the greenhouse effect, and how many tons of carbon emission would have the same effect.

The carbon footprint of each action alternative was calculated using the CLIP tool. National Park Service staff input energy consumption information (gallons of diesel fuel used, kilowatt hours per year, miles driven) into the CLIP tool based on assumptions made for facility use (square footage of building space), NPS operations, and recreational demand. Actions that had attributing emissions were assessed in comparison to existing conditions. The CLIP tool produces quantitative measures of gross emissions, measured as MTCO2e. This data provides a measurement of the carbon footprint. While the gross emissions of the alternatives are expressed numerically, the impact analysis (especially for effects on park resources) is general and qualitative. Overall,

the goal of the analysis was to assist park managers with evaluating carbon footprint as part of their decision-making process.

The thresholds to determine the impact intensity for carbon footprint are defined as follows:

Negligible*:* The action would result in a change in total greenhouse gas emissions, but the change would be at the lowest level of detection, or not measurable. Impacts would not result in a change to local air quality.

Minor: The action would result in a slight but detectable change in total greenhouse gas emissions. Impacts could result in a change to local air quality, but the change would be so slight that it would not be of any measurable or perceptible consequence.

Moderate*:* The action would result in a modest change in total greenhouse gas emissions, which could result in a change to local air quality.

Major*:* The action would result in a substantial change in total greenhouse gas emissions, which could result in a change to local air quality.

Soils and Geologic Resources and Processes

The effects of the alternatives on soils and geologic resources (including shoreline and coastal processes) are analyzed based on the possibility of impacts resulting primarily from facility development and visitor use.

The thresholds to determine the impact intensity for these resources are defined as follows:

Negligible: The impact is barely detectable and/or would result in no measurable or perceptible changes to soils and geologic resources or processes. The effects on soil character and stability and natural shoreline or coastal processes would be slight. Disruptions to geologic processes would not be perceptible.

Minor: The impact is slight but detectable and/or would result in small but measurable changes to soils and geologic resources; the effect would be localized. There could be changes in soil character and stability in a relatively small area, but the change would not noticeably increase the potential for erosion. Disruptions to natural shoreline or coastal processes would be within the natural range of variability.

Moderate: The impact is readily apparent and/or would result in easily detectable changes to soils or geologic resources; the effects would be localized. The effect on soil productivity and natural shoreline or coastal processes would be apparent. The potential for erosion to remove small quantities of additional soil would noticeably increase or decrease. Disruptions to geologic processes are expected to be within the natural range of variability, but could be perceptible in the short term.

Major: The impact is severely adverse or exceptionally beneficial and/or would result in appreciable changes to soils or geologic resources; the effect would be regional in scale. There would be a strong likelihood that erosion would remove large quantities of additional soil or erosion would be substantially reduced. Disruptions to natural shoreline or coastal processes are expected to be outside the natural range of variability and may be permanent.

Water Resources and Hydrologic Processes

Terrestrial and freshwater resources (including stream character, water quantity and quality, watershed processes, wetlands, and floodplains) are analyzed together in this section because of the similarities of these resources, their interrelationship with each other, and their collective effect on the overall integrity of hydrologic systems. For example, terrestrial sediment inputs shape the character of streams: sediment-starved streams incise, while sediment-rich streams often result in aggradation and widening. Healthy riparian vegetation can also filter pollutants before reaching a creek; this in turn affects water quality. In addition, many riparian areas are often classified as wetlands, depending in part on their duration of saturation each year. Together, all of these elements affect hydrologic processes that can influence the condition of a watershed. Marine and estuarine resources/systems are discussed with a focus on water quality and ocean stewardship. Although impacts on terrestrial/freshwater and marine/estuarine resources and systems are discussed and analyzed separately, one conclusion is presented for water resources as a whole.

The following impact thresholds have been developed for analyzing water resources:

Negligible*:* Stream character, water quality, watershed processes, wetlands, and floodplains would not be impacted, or the impacts would be undetectable, or if detectable, the effects would be considered slight, localized, and short term. Any measureable changes would be within the natural range of variability.

Any impacts on marine/estuarine water quality and ocean resources would be slight, localized, and mostly inconsequential.

Minor*:* Impacts (chemical, physical, or biological) to stream character, water quality, watershed processes, wetlands, and floodplains would be small, short term, and localized. Natural processes, functions, and integrity would be temporarily affected, but would be within the natural range of variability. The impacts would only affect a few individuals of plant or wildlife species dependent on one or more of these water-related resources. Any changes would require considerable scientific effort to measure and have barely perceptible consequences.

Any impacts on marine/estuarine water quality and ocean resources would be noticeable and would be short term, requiring considerable scientific effort to measure and having barely perceptible consequences.

Moderate*:* Impacts (chemical, physical, or biological) to stream character, water quality, watershed processes, wetlands, and floodplains would be readily apparent, long term, and localized. Natural processes, functions, and integrity would be affected, but would be only temporarily outside the natural range of variability. The impacts would have a measurable effect on plant or wildlife species dependent on one or more of these water-related resources, but all species would remain indefinitely viable within the park and monument.

Any impacts on marine/estuarine water quality ocean resources would be noticeable and might be long term.

Major*:* Impacts (chemical, physical, or biological) would have drastic and permanent consequences for stream character, water quality, watershed processes, wetlands, and floodplains that could not be mitigated. Species dependent on one or more of these water-related resources would be at

risk of extirpation from the park. Changes would be readily measurable, would be outside the natural range of variability, would have substantial consequences, and would be noticeable on a regional scale.

Any impacts on marine/estuarine water quality and ocean resources would be readily noticeable and long term and would cause permanent damage or benefit.

Habitat (vegetation and wildlife)

Vegetation and wildlife are addressed together in this section, because an analysis of potential impacts on wildlife typically involves a discussion of wildlife habitat, which consists of various vegetation and aquatic communities found within the park and monument. Soils and substrates, topography, microclimates, and landscape configuration also affect habitats, but these elements are addressed in separate sections within the natural resources section of the environmental consequences part. Threatened and endangered species associated with these resources are discussed under a separate impact topic as well. The effects of the alternatives on marine resources and habitat are analyzed based on the possibility of impacts resulting primarily from facility development and visitor use.

The thresholds to determine impact intensity for these resources are defined as follows:

Negligible*:* There would be no observable or measurable impacts on the spatial extent of native species or their habitats or the natural processes sustaining them. There would be no discernible change in native habitat integrity. Native and nonnative species richness and abundance would remain the same. Impacts would be of short duration and well within natural fluctuations.

Minor: Impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on native species, their habitats, or the natural processes sustaining them. Any changes in native habitat integrity and native and nonnative species richness and abundance would be minimal.

Population numbers, population structure, genetic variability, and other demographic factors for species might have small, short-term changes, but long-term characteristics would remain stable and viable. Disturbance of some individuals could be expected, but without interference to reproduction or other factors affecting population levels.

Key ecosystem processes might have short-term disruptions that would be within natural variation. Habitat integrity would be maintained to support species' needs. Impacts would be outside critical reproduction periods for sensitive native species. Improvements to habitat quality may be detectable, but would not result in measurable improvements in ecosystem resiliency.

Alcatraz waterbirds would be affected by localized disturbance and/or unnaturally elevated predation levels. Few species would be affected, with potential for localized reduction in reproductive success and/or localized decline in size of subcolonies.

Moderate*:* Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability for short periods of time. Population numbers, population structure, genetic variability, and other demographic factors might experience short-term changes, but would be

expected to rebound to pre-impact numbers and to remain stable and viable in the long term. Frequent responses to disturbance by some individuals could be expected, with some negative impacts on feeding, reproduction, or other factors affecting short-term population levels.

Breeding animals of concern are present; animals are present during particularly vulnerable life-stages, such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the park and monument.

Key ecosystem processes might have short-term disruptions that would be outside natural variation (but would soon return to natural conditions). Habitat integrity would be maintained to support species' needs. Some impacts might occur during critical periods of reproduction or in key habitat for sensitive native species. Improvements to habitat quality would be detectable and could result in measurable improvements in ecosystem resiliency.

Alcatraz waterbirds would be affected by disturbance and/or unnaturally elevated predation levels over a broader area of the island. More species would be potentially affected, there would be potential for long-term abandonment of subcolonies, with moderate reduction in population size (less than 50%).

Major: Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or be permanent. Population numbers, population structure, genetic variability, and other demographic factors might have large, short-term declines, with long-term population numbers substantially depressed. Frequent responses to disturbance by some individuals would be expected, with negative impacts on feeding, reproduction, or other factors resulting in a long-term decrease in population levels.

The impact is severely adverse or exceptionally beneficial or would result in appreciable changes to wildlife resources and habitat; the effect would be regional in scale. Impacts would result in a reduction in species numbers, alteration in behavior, reproduction, migration, or survival. Severe adverse impacts would alter or destroy habitat in a way that would prevent biological communities that inhabited the area prior to the action from reestablishing themselves. These impacts are expected to be outside the natural range of variability and may be permanent.

Key ecosystem processes might be disrupted in the long term or permanently. Loss of habitat integrity might affect the viability of at least some native species. Improvements to habitat quality would be detectable and permanent and would result in substantial improvements in ecosystem resiliency.

Many Alcatraz waterbird species would be affected by continuous, prolonged disturbance and/or unnaturally elevated predation levels. There would be potential for long-term subcolony or island abandonment with substantial reduction in island population size (greater than 50%).

Special Status Species

Federal and state listed threatened and endangered species are addressed together in this section because many of these species (1) have dual federal and state special status, (2) occur together in the same habitats, or (3) would be impacted similarly under each alternative. The environmental consequences for federal threatened and endangered species are described in such a way that meets the requirements of the National Environmental Policy Act and the Endangered Species Act. Definitions for impact conclusions required for section 7 of the Endangered Species Act consultation are presented below:

No effect: When a proposed action would not affect a federal listed species, candidate species, or designated critical habitat.

May affect, not likely to adversely affect: Effects on federal listed or candidate species are discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated) or are completely beneficial.

May affect, likely to adversely affect: Adverse effects to a federal listed or candidate species may occur as a direct or indirect result of proposed actions and the effects are either not discountable or completely beneficial.

Likely to jeopardize proposed species or adversely modify proposed critical habitat (impairment): The appropriate conclusion when the National Park Service or the U.S. Fish and Wildlife Service identifies situations in which the proposal could jeopardize the continued existence of a federal listed or candidate species or adversely modify critical habitat to a species within or outside park boundaries.

The following impact threshold definitions are used to describe the severity and magnitude of changes to federal and state listed species under each of the alternatives. Each threshold definition references the Endangered Species Act determinations previously described.

Negligible: Impacts would be imperceptible or not measurable (undetectable). For federal listed species, this impact intensity would equate to a determination of "no effect."

Minor: Impacts would be slightly perceptible and localized in extent; without further actions, adverse impacts would reverse and the resource would recover. Adverse impacts may include disturbance to individuals or avoidance of certain areas. Beneficial impacts would include slight increases to viability of the species in the park as species-limiting factors (e.g., habitat loss, competition, and mortality) are kept in check. For federal listed species, this impact intensity would equate to a determination of "may affect, not likely to adversely affect."

Moderate: Impacts would be readily measurable (apparent) and extend farther geographically than a minor impact; localized in extent; adverse impacts would eventually reverse and the resource would recover. Adverse impacts may include disturbance, injury, or mortality of individuals, but the long-term viability of the population would be maintained. For federal listed species, this impact intensity would equate to a determination of "may affect, likely to adversely affect." Beneficial impacts would include increases to viability of the species in the park as species-limiting factors (e.g., habitat loss, competition, and mortality) are kept in check. For federal listed species, this impact intensity would equate to a determination of "may affect, not likely to adversely affect."

Major: Impacts would be substantial, highly noticeable, and affecting a large geographic area; changes would be irreversible with or without active management. Adverse impacts may include disturbance, injury, or mortality

of individuals to the point that the long-term viability of the population would be compromised. In extreme adverse cases, effects would be irreversible and populations may be extirpated from the park. For federal listed species, this impact intensity would equate to a determination of "may affect, likely to adversely affect." Beneficial impacts would include increases to viability of the species in the park as species-limiting factors (e.g., habitat loss, competition, and mortality) are substantially reduced and species resilience is enhanced by greatly improving habitat integrity. For federal listed species, this impact intensity would equate to a determination of "may affect, not likely to adversely affect."

CULTURAL RESOURCES

Methodology

In this assessment, environmental impacts on cultural resources are described in terms of type (adverse or beneficial), context, duration (short-term, long-term, or permanent), and intensity (negligible, minor, moderate, major), which is consistent with the regulations of the Council on Environmental Quality that implement the National Environmental Policy Act. These impact analyses are intended, however, to comply with the requirements of both the National Environmental Policy Act and section 106 of the National Historic Preservation Act. In addition to including section 106 findings in this document, the National Park Service intends to submit an independent Finding of Effect to the California state historic preservation office on the final preferred alternative (which will constitute the "undertaking" for section 106 purposes). See "Part 12: Consultation, Coordination, and Preparation" for more information on the section 106 consultation with the state historic preservation office. In accordance with ACHP regulations implementing section 106 of the National Historic Preservation Act (36 CFR 800, *Protection of Historic Properties*), impacts on cultural resources were also identified and evaluated by (1) determining the area of potential effect, (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places, (3) applying the criteria of adverse effect to affected, national register-listed or national register-eligible cultural resources, and (4) considering ways to avoid, minimize, or mitigate adverse effects. Cultural resources that could be affected under this project were identified by consulting with park cultural resources staff, reviewing previous studies and reports, reviewing site inventories and maps, conducting field visits to sites where actions may occur, and overlaying proposed actions on top of maps of known resources to identify potential direct and indirect impacts.

In accordance with 36 CFR 800, for historic properties in the area of potential effects that are listed in or eligible for listing in the National Register of Historic Places, the results are either *no historic properties affected* (either there are no historic properties present or there are historic properties present but the undertaking will have no effect on them), or *historic properties affected* (there are historic properties that may be affected by the proposed action). In addition, a determination of either *adverse effect* or *no adverse effect* must be made for affected national register-listed or national register-eligible cultural resources. A determination of *no adverse effect* means there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the national register. The ACHP regulations (36 CFR 800.5) define an adverse impact to a historic property as one that may

> *alter, directly or indirectly, any of the characteristic of a historic property that qualify it for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics*

> *of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the national register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (*36 CFR 800.5, Assessment of Adverse Effects*).*

CEQ regulations and the NPS *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order 12) also call for a discussion of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by section 106 is similarly reduced. Cultural resources are nonrenewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under section 106 may be mitigated, the effect remains adverse.

In addition, special consideration must be given to national historic landmarks during the planning process. Section 110(f) of the National Historic Preservation Act requires that a federal agency, to the maximum extent possible, minimize harm to a national historic landmark that may be directly and adversely affected by an undertaking. When there is an adverse effect on a national historic landmark, the agency shall request the Advisory Council on Historic Preservation to participate in any consultation to resolve adverse effects. The agency shall also notify the Secretary of the Interior of any consultation and invite the Secretary to participate in the consultation where there may be an adverse effect. When this happens, the Advisory Council shall report the outcome of the section 106 process to the president, Congress, the Secretary of the Interior, and the head of the lead federal agency, and provide written comments or any memoranda of agreement to which it is a signatory as a result of this consultation.

A section 106 summary is included in the conclusion for each alternative's impact analysis sections. The section 106 summary is an assessment of the effect of the undertaking (implementation of the alternative), based on the criteria of effect and criteria of adverse effect found in the ACHP regulations.

Historic Structures, Districts, and Cultural Landscapes

The following impact thresholds have been developed for analyzing impacts on historic structures and districts and cultural landscapes:

> **Negligible**: Impacts would be at the lowest levels of detection, barely measurable with neither adverse nor beneficial consequences. Historic structures, districts, and cultural landscapes would incur no change or barely perceptible changes to the defining features that contribute to the resource's national register eligibility. For purposes of section 106, the determination of effect would be *no adverse effect*.
>
> **Minor**: Adverse Impact: Impacts would not affect the character-defining features of a historic structure, district, or cultural landscape listed or eligible for the national register. Impacts would be measurable or detectable but would be slight and would not diminish the overall integrity of the resource. For purposes of section 106, the determination of effect would be *no adverse effect*.
>
> **Beneficial Impact:** Historic features of the structure, district, or landscape would be stabilized and preserved in accordance

with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, thus maintaining the integrity of the resource. For purposes of section 106, the determination of effect would be *no adverse effect*.

Moderate: Adverse Impact: Impacts would alter a character-defining feature(s) of a significant historic structure, district, or cultural landscape and would result in measurable and perceptible effects. These changes to one or more of the characteristics that qualify the resource for inclusion in the national register could diminish the overall integrity of the resource, but would not jeopardize its national register eligibility. For purposes of section 106, the determination of effect would be *adverse effect*.

Beneficial Impact: Preservation and rehabilitation of the historic structure, district, or cultural landscape and its contributing features would be in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of section 106, the determination of effect would be *no adverse effect.*

Major: Adverse Impact: Impacts would result from substantial and highly noticeable changes that would alter the character-defining features of a historic structure, district, or cultural landscape. These impacts would be substantial, noticeable, and permanent. The action would severely change one or more characteristics that qualify the resource for the National Register of Historic Places, and would diminish the overall integrity of the resource to the extent that it would no longer be eligible to be listed in the national register. For purposes of section 106, the determination of effect would be *adverse effect.*

Beneficial Impact: The character-defining features of a historic structure, district, or landscape would be maintained and restored in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. For purposes of section 106, the determination of effect would be *no adverse effect*.

Archeological Resources

The following impact thresholds have been developed for analyzing impacts on archeological resources:

Negligible: Impact is at the lowest level of detection. Impacts would be measurable, but with no perceptible consequences. For purposes of section 106, the determination of effect would be *no adverse effect*.

Minor: Adverse Impact: Disturbance of a site results in little loss of integrity, measurable but slight loss of material context, and information potential, not enough to diminish the characteristics that qualify the site for the national register. The determination of effect for section 106 would be *no adverse effect.*

Beneficial Impact: The site is maintained and preserved. The determination of effect for section 106 would be *no adverse effect.*

Moderate: Adverse Impact: A site is disturbed enough to diminish one or more of the characteristics that qualify it for the national register, but not entirely obliterated. The determination of effect for section 106 would be *adverse effect*.

Beneficial Impact: The site would receive additional stabilization and protection. The determination of effect for section 106 would be *no adverse effect*.

Major: Adverse Impact: A site is obliterated. The determination of effect for section 106 would be *adverse effect*.

Beneficial Impact: Active intervention would enhance the information and interpretive potential value of the site. The determination of effect for section 106 would be *no adverse effect.*

Ethnographic Resources

The following impact thresholds have been developed for analyzing impacts on ethnographic resources:

Negligible: Impacts would be at the lowest levels of detection and barely perceptible. Impacts would neither alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of section 106, the determination of effect would be *no adverse effect.*

Minor: Adverse Impact: would be slight but noticeable and would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the group's body of beliefs and practices. For purposes of section 106, the determination of effect would be *no adverse effect.*

Beneficial Impact: Impacts would allow access and/or accommodate a group's traditional practices or beliefs. For purposes of section 106, the determination of effect would be *no adverse effect.*

Moderate: Adverse Impact: would be apparent and would alter resource conditions or interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's beliefs and practices, even though the group's practices and beliefs would survive. For purposes of section 106, the determination of effect would be *adverse effect.*

Beneficial Impact: Impacts would facilitate traditional access and/or accommodate a group's practices or beliefs. For purposes of section 106, the determination of effect would be *no adverse effect.*

Major: Adverse Impact: would alter resource conditions. Proposed actions would block or greatly affect traditional access, site preservation, or the relationship between the resource and the group's body of beliefs and practices to the extent that the survival of a group's beliefs and/or practices would be jeopardized. For purposes of section 106, the determination of effect would be *adverse effect.*

Beneficial Impact: Impacts would encourage traditional access and/or accommodate a group's practices or beliefs. For purposes of section 106, the determination of effect would be *no adverse effect.*

Park Collections

Park collections (precontact and historic objects, artifacts, works of art, archival documents, and natural history specimens) are generally ineligible for listing in the National Register of Historic Places. As such, section 106 determinations of effect are not provided. The following impact thresholds have been developed for analyzing park collections:

Negligible: Impact(s) would be at the lowest levels of detection, barely measurable with no perceptible consequences, either adverse or beneficial, to park collections.

Minor: Adverse Impact: Impact(s) would affect the integrity of a few of an item or

group of items in the park collection, but would not degrade the usefulness of the collection for future research and interpretation.

Beneficial Impact: Impacts would stabilize the current condition of the collection or its constituent components to minimize degradation.

Moderate: Adverse Impact: Impact(s) would affect the integrity of many an item or group of items in the park collection and diminish the usefulness of the collection for future research and interpretation.

Beneficial Impact: Impacts would improve the condition of the collection or its constituent parts from the threat of degradation and increase its usefulness for research and interpretation.

Major: Adverse Impact: Impact(s) would affect the integrity of most items in the park collection and destroy the usefulness of the collection for future research and interpretation.

Beneficial Impact: Impacts would secure the condition of the collection as a whole or its constituent components from the threat of further degradation and dramatically increase its use in significant research and broader interpretation efforts.

VISITOR USE AND EXPERIENCE

This impact analysis considers various aspects of visitor use and experience at Golden Gate National Recreation Area and Muir Woods National Monument, including the effects on diversity of recreation opportunities and national park experiences; visitor understanding, education, and interpretation; safe and enjoyable access and circulation to and within the park; and visitor safety.

The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives. Impacts on visitor use and experience were determined considering the best available information. Information on visitor use and opinions were taken from the public scoping information for this plan and surveys of visitors and nonvisitors conducted by various researchers. Other information that was considered in the analysis includes the parks' annual reporting of visitor use levels, including overnight stays, to the National Park Service's Public Use Statistics Office, and local and regional travel and tourism data.

Primarily, visitors expressed interest in preserving and educating visitors about the unique natural and cultural resources of the park and monument, continuing to provide high-quality trail opportunities, exploring improved transportation and access to the park lands and better preserving the scenic beauty of the park's setting.

Impacts on visitor use and experience are described in terms of the effect on the following components:

- diversity of recreation opportunities and national park experiences
- visitor understanding, education, and interpretation
- safe and enjoyable access and circulation to and within the park (see also transportation section)
- visitor safety

The duration of a short-term impact would be less than one year. A long-term impact would last more than one year and would be more permanent in nature.

Adverse impacts are those that most visitors would perceive as undesirable. Beneficial impacts are those that most visitors would perceive as desirable.

The thresholds to determine impact intensity are defined as follows:

Negligible: Most visitors would likely be unaware of any effects associated with implementation of the alternative.

Minor: Changes in visitor opportunities and/or setting conditions would be slight but detectable, would affect few visitors, and would not appreciably limit or enhance experiences identified as fundamental to the park's purpose and significance.

Moderate: Changes in visitor opportunities and/or setting conditions would be noticeable, would affect many visitors, and would result in some changes to experiences identified as fundamental to the park's purpose and significance.

Major: Changes in visitor opportunities and/or setting conditions would be highly apparent, would affect most visitors, and would result in several changes to experiences identified as fundamental to park purpose and significance.

SOCIAL AND ECONOMIC ENVIRONMENT

When assessing the potential impacts on the social and economic environment, several impact parameters must be analyzed for each action alternative. First, the *type* of impact must be determined (i.e., whether the impact is beneficial or adverse). The beneficial and adverse impacts on the social and economic environment are determined by comparing the anticipated changes resulting from implementing any of the action alternatives to the results of continuing current management (i.e., the no-action alternative). Once it is determined if an impact is beneficial or adverse, the other impact attributes can be assessed, such as *context, duration,* and *intensity*.

Context: The context refers to the setting or geographic scope of the impact on the social and economic conditions. In this analysis, impacts would be measured relative to the following three context levels (when applicable):

- local gateway communities (immediate proximity to park sites)
- three adjacent counties (Marin, San Francisco, and San Mateo)
- Bay Area (nine-county region)

Intensity: The intensity refers to the significance or degree of the impact to the social and economic conditions. The thresholds are defined as follows:

Negligible: No effects occur or the effects on social and economic conditions would be unnoticeable. The action would not yield any noticeable or measureable changes to quality of life, the population demographic, and local economy.

Minor: The effects on social and economic conditions would be detectable, but only slight and limited to a small portion of the surrounding community and local economy. The action would minimally influence the quality of life, the population demographic, and/or local economy.

Moderate: The effects on social and economic conditions would be readily apparent and would influence multiple segments of the community or local economy. The action would yield changes that are noteworthy or modest to the quality of life, the population demographic, and/or local economy.

Major: The effects on social and economic conditions would be very apparent, significant, and/or widespread throughout the community and local economy. The action would yield considerable changes to the quality of life, the population demographic, and/or local economy.

In the discussion of impacts on the social and economic environment, an analysis section and conclusion section are included for each alternative for Golden Gate National Recreation Area including Alcatraz Island and Muir Woods National Monument, including the no-action alternative. Also, the analysis begins with a section that addresses the impacts from actions that are common to all action alternatives for both Golden Gate National Recreation Area and Muir Woods National Monument.

TRANSPORTATION

Planning alternatives for Golden Gate National Recreation Area and Muir Woods National Monument were developed for park lands in San Mateo, Marin, and San Francisco counties. For each of the three counties, as well as for Muir Woods National Monument, the proposed alternatives are discussed with respect to their qualitative effect on visitor access and circulation related to roadways, parking, bicycle access, pedestrian access, transit service, and access to transit. Muir Woods National Monument has been the subject of more detailed transportation analysis in recent years, enabling this section to include more quantitative analysis than the other areas.

Transportation impacts for the no-action alternative and the three action alternatives are discussed for park lands for each county and separately for Muir Woods National Monument.

- Marin County – southeast coastal area, southwest coastal area, Marin Headlands, and the Stinson Beach area
- San Francisco – Upper Fort Mason, China Beach, Lands End, East and West Fort Miley, Ocean Beach, and Fort Funston
- San Mateo County – multiple sites
- Muir Woods National Monument

Other than continuing and expanding shuttle service to Muir Woods National Monument, changes in transit service that would be provided by agencies other than the National Park Service, are not modeled.

Impacts on visitor access and on the transportation system are described in terms of their effect in the following areas, as applicable:

- multimodal visitor connections to park sites and communities
- access by land, including roads, public transit, tour buses, trails, and bicycles
- access by water, including ferries, water taxis, or other water transit

Functionality of the transportation system

- land transportation, including traffic flow, congestion, and circulation; parking availability; transit service availability; transit facility capacity; amenities and condition; and public safety
- water transportation, including facility capacity and condition, multimodal access, and public health and safety
- connectivity, including number and capacity of connections, and availability of modes of travel
- directional and park site identification signs and wayfinding information

For this analysis, equestrian activity is considered recreational and is not included as part of the transportation system.

Definitions.

Type: The impact is determined to be either beneficial or adverse. The beneficial and adverse impacts on the transportation system are determined by comparing the anticipated changes resulting from implementing any of the action alternatives to the results of

continuing current management (i.e., the no-action alternative).

Intensity: The intensity refers to the significance or degree of the impact to the transportation system. The thresholds are defined as follows:

> **Negligible***:* Most visitors would likely be unaware of any effects associated with implementation of the alternative.
>
> **Minor***:* Changes in visitor access/ circulation would be slight but detectable, would affect few visitors, and would not appreciably limit or enhance visitors' ability to visit park sites or move within park sites.
>
> **Moderate***:* Changes in visitor access/ circulation would be noticeable, would affect many visitors, and would result in some changes to the ability to visit park sites or move within park sites.
>
> **Major***:* Changes in visitor access/ circulation would be highly apparent, would affect most visitors, and would result in many changes to the ability to visit park sites or move within park sites.

In addition to the aforementioned terms, four terms are used to describe the seasonality of transportation impacts:

Peak season: The impact would occur primarily from Memorial Day through Labor Day.

Shoulder season: The impact would affect transportation in April and May in the spring, and in September in the fall.

Low visitation or offseason: The impact would occur primarily from October 1 through April 30.

Year-round: The impact would affect visitor experiences for much of the year, especially if adverse effects during peak months had the effect of spreading visitation more evenly throughout the year.

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

The impact analysis evaluated the effects of the alternatives on Golden Gate National Recreation Area and Muir Woods National Monument operations, including staffing, infrastructure, maintenance, visitor facilities, and services.

The analysis focused on how operations and facilities might vary with the different management alternatives. The analysis is qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

The following impact thresholds have been developed for analyzing park management, operations, and facilities:

> **Negligible**: The effect would be at or below the lower levels of detection and would not have an appreciable effect on park operations and management
>
> **Minor**: The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations and management.
>
> **Moderate**: The effects would be readily apparent and would result in a change in park operations and management in a manner noticeable to staff and the public.
>
> **Major**: The effects would be readily apparent and would result in a substantial change in park operations and management in a manner noticeable to staff and the public. The change would produce conditions that would be markedly different from existing operations.

COMMON TO ALL ACTION ALTERNATIVES AT GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT

NATURAL RESOURCES

Analysis. The goals and strategies that are common to all action alternatives include policy guidance on a variety of topics that would have an impact on natural resources. These topics include park boundaries, climate change, ocean stewardship, partnerships, Redwood Creek Vision, Sharp Park, transportation, trails, and park collections. In general, all of the guidance that is included would have a beneficial impact on natural resources.

For example, the park boundary policy (see volume I, part 3) contains goals for science-based land and water acquisition that would improve the integrity of natural resources. It also includes the proposed acquisition of several parcels of land and water in San Mateo County as well as potential future boundary adjustments across the park.

The policy on climate change includes goals for greenhouse gas emissions reduction and responding to the effects of climate change on natural resources. The management approach that is included seeks to reduce environmental stressors, maintain biological diversity, and develop adaptation responses to build resiliency in natural systems and species.

The ocean stewardship policy includes management strategies and objectives that would help to protect ocean resources through improved research and collaborative management with other state and federal agencies.

The partnerships policy would assist the National Park Service in developing collaborative agreements with other park partners whose programs have shared goals, including preservation of natural resource management.

The American Indian engagement policies could have minor, adverse impacts on vegetation and wildlife impacts due to the collection of natural materials. Coordination between American Indians and park staff would ensure that habitat integrity would be maintained.

The transportation policy includes goals for multimodal and alternative transportation, which would assist the National Park Service in reducing its carbon footprint and air quality concerns in the Bay Area.

The trails policy includes goals on sustainable trail design and best management practices, which would assist the National Park Service in improving habitat quality and integrity by reducing impacts from erosion, nonnative and invasive species, and habitat fragmentation.

The park collections policy would benefit natural resources by ensuring that natural resource specimens (whether geologic, botanical, etc.) are properly protected and managed.

Conclusion. Overall, impacts on natural resources resulting from these policies would be long term, beneficial, and would range from negligible to moderate throughout Golden Gate National Recreation Area and Muir Woods National Monument.

CULTURAL RESOURCES

Analysis. Development of new or improved maintenance hubs, a public safety hub, satellite maintenance offices, and parking

areas, as well as expanding the park's trail system and improving connectivity and accessibility, could adversely impact the park's archeological resources, historic structures, and cultural landscapes. Strategic archeological surveys of portions of a trail system would provide critical information to avoid impacts on archeological resources from both direct construction and from indirect visitor use. Sites within impact areas would be evaluated for their significance, and treatment plans would be developed to avoid adverse effects to them. National register-eligible or national register-listed archeological resources would be avoided to the greatest extent possible. If such resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the California state historic preservation office and, if necessary, associated American Indian tribes. If during construction, previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented; if the resources could not be preserved in situ, an appropriate mitigation strategy would be developed in consultation with the state historic preservation office and associated American Indian tribes. Because national register eligible- or national register-listed archeological resources would be avoided to the greatest extent possible, any adverse effects would be expected to be minor to moderate in intensity and permanent. The National Park Service would continue to participate in multiagency planning and implementation efforts following the San Francisco Planning and Urban Research Association (SPUR) 2012 Ocean Beach Master Plan, and other more detailed planning and implementation processes that would follow.

Archeological resources adjacent to or easily accessible from trails and developed areas could be vulnerable to surface disturbance, inadvertent damage, and vandalism. A loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence could result, creating moderate, permanent, adverse effects to sites whose significance was characterized by solely surficial deposits. However, continued ranger patrol and emphasis on visitor education would help to discourage vandalism and inadvertent destruction of cultural remains, and any adverse impacts would be expected to be minor to moderate.

Every effort would be made to establish new or improved maintenance hubs, a public safety hub, satellite maintenance offices, and parking facilities in existing developed areas or in rehabilitated historic buildings whose architectural values are protected and preserved. Careful design of the new Marin Headlands central maintenance facility would seek to minimize the number of Capehart units removed and minimally affect the scale and visual relationships among existing landscape features and circulation patterns. In addition, the topography, native vegetation patterns, and land use patterns would remain largely unaltered. Any adverse impacts would be long term and of minor intensity. Improved maintenance facilities and programs would enable the park to conduct more comprehensive cultural resource preservation and maintenance programs and thus enhance protection of the park's cultural resource values—a beneficial impact.

Inclusion of the San Mateo County properties (Gregerson Property adjacent to Rancho Corral de Tierra, Vallemar Acres, and Highway Frontage in the West Cattle Hill vicinity) and potential future boundary adjustments (the Marin City Ridge, Pacifica Conservation Area, Montara Mountain Complex, and San Mateo County gateway) would result in enhanced identification, protection, and interpretation of archeological resources, historic structures, and cultural landscape values in those areas per NPS cultural resource policies, but only if appropriate funding and FTEs were to be expended on them.

Implementation of the park's climate change policy and action plan would result in (1) an understanding of how to protect and preserve

the park's archeological resources, historic structures, and cultural landscapes by reducing current stressors to such resources, (2) assisting in development of triage criteria for prioritizing preservation treatments and other management actions for cultural resources such as relocation coupled with sustainable mitigation efforts for shoreline resources, and (3) guiding managed retreat programs when the triage process indicated that preservation treatment or relocation was not a feasible option.

Establishing a curatorial and research facility that meets NPS standards and can accommodate the majority of the park collection will have a long-term beneficial impact to the preservation of the collections. Strengthening the collection policy and implementing actions to connect people with the park's museum will have a beneficial impact by increasing public stewardship opportunities, access to the park's history, and integration of the park collections into the park's visitor experience.

Implementation of the park's Ocean Park Stewardship Policy would result in improved identification, understanding, protection, and preservation of the park's archeological (i.e., submerged) resources.

Ongoing NPS efforts to establish and foster effective partnerships would result in beneficial impacts on the park's archeological resources, historic structures, and cultural landscapes because partnerships (1) create appreciation and support for the park's resources, and (2) increase avenues through which communities and visitors can engage with the park to preserve and enhance those resources.

Implementation of the Redwood Creek Vision would result in enhanced collaborative efforts to identify, protect/preserve, and interpret archeological resources, historic structures, and cultural landscapes in the Redwood Creek watershed.

Ongoing and enhanced American Indian engagement programs and protocols by the park with the Federated Indians of Graton Rancheria and Ohlone tribes and individuals would result in improved cultural resource management of archeological and ethnographic sites; collaborative interpretation and education activities; and revitalization of American Indian communities, traditions, and heritage.

Additionally, improving ferry access to Alcatraz Island and establishing ferry routes to other park sites within San Francisco Bay would result in better preservation of the cultural resources by minimizing transportation impacts on its cultural landscape values.

Execution of implementation plans for Alcatraz, such as preparation of a cultural landscape report, historic resource study, and baseline inventory and HABS recovery plan, would provide the National Park Service with the knowledge to better preserve and more effectively interpret the multiple layers of historic development associated with the island's significant archeological resources, ethnographic sites, historic structures, and cultural landscapes.

Conclusion. Because national register-eligible or national register-listed archeological resources would be avoided to the greatest extent possible, any adverse effects would be expected to be minor to moderate in intensity and permanent. A loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence could result. However, continued ranger patrol and emphasis on visitor education would discourage vandalism and inadvertent destruction of cultural remains, and any adverse impacts would be expected to be negligible to minor. Careful design of new facilities would ensure that new structures would minimally affect the scale and visual relationships among existing landscape features or circulation patterns and features. In addition, the topography, native vegetation patterns, and land use patterns would remain

largely unaltered. Any adverse impacts would be long term and of minor intensity. Improved maintenance facilities and programs would enable the park to conduct more comprehensive cultural resource preservation and maintenance programs and thus enhance protection of the park's cultural resource values—a beneficial impact.

Actions common to all alternatives would generally have beneficial impacts on the protection and preservation of archeological resources, ethnographic sites, historic structures, and cultural landscapes in Golden Gate National Recreation Area including Alcatraz Island. Any adverse effects to archeological resources and ethnographic resources would be expected to be negligible to moderate in intensity and permanent. Any adverse impacts on cultural landscape resources (including historic structures) would be long term and of minor intensity.

Concerning the actions common to all alternatives, the section 106 determination of effect on archeological resources, ethnographic sites, historic structures, and cultural landscapes in Golden Gate National Recreation Area including Alcatraz Island is *adverse effect*.

VISITOR USE AND EXPERIENCE

Analysis. In addition to the specific proposals in the action alternatives, some of the recommendations and policies that are common to all action alternatives would have a beneficial impact on visitor use and experience at both Golden Gate National Recreation Area and Muir Woods National Monument. Several of the proposed boundary adjustments would provide new lands for recreation, expanding the diversity of settings, and new lands for access purposes, facilitating better access options to various park sites; both of these would have a beneficial impact on visitor use and experience. The recommendations for educating visitors on climate change and ocean stewardship would have a beneficial impact on visitor experience by providing visitors with direct access to the latest research and knowledge, providing increased awareness and inspiration regarding these important subjects. Actions that improve the preservation and visitor access to the park collection would strengthen the park's interpretive and education programs. The new public safety office proposed at Shelldance Nursery would have a beneficial impact on visitor safety by providing shorter response times and a constant NPS presence in the southern portion of Golden Gate National Recreation Area. The partnership strategy would ensure that NPS partnerships continue to serve the needs of visitors with high-quality services, facilities, and opportunities. If the park ends up owning or managing portions of Sharp Park that are contiguous to lands managed by the National Park Service, visitors would benefit from additional trail-based recreation and educational opportunities. These actions would have a long-term, moderate beneficial impact on visitor experience in the park.

The transportation strategy emphasizes the goal of providing sustainable, multimodal access to many park sites, which would benefit visitors by reducing traffic congestion and use conflicts, and facilitating more efficient access to and between park sites. Finally, the trails strategy emphasizes the goal of providing an enduring trail system that serves as a sustainable network of access within and between park sites. Trails provide one of the most important ways that visitors experience and enjoy the park and discover its diverse settings. Providing a long-term strategy to perpetuate a coordinated and sustainable trail and transportation system would result in a long-term, moderate, beneficial impact to visitor experience.

Conclusion. The recommendations and policies that are described in the actions common to all alternatives will have a long-term, moderate, beneficial influence on visitor experience at the park. Visitors would be provided enhanced access throughout the park by improved trails and transportation systems, increased opportunities for

interpretation and education supported by the park collections and new programs related to climate change and ocean stewardship. Strengthening the park partnership programs and preservation of park resources by potential expansion of park boundaries and expanded increased public safety facilities would contribute to improvements to visitor experience.

SOCIAL AND ECONOMIC ENVIRONMENT

Analysis. The improvement of community connectivity to Golden Gate National Recreation Area park sites via an expanded transportation system, multimodal opportunities, and enhanced regional trail network could improve the quality of life of residents in the area. More residents of local communities would be able to visit the park to exercise, enjoy the natural coastal settings, participate in outdoor recreational activities, educational and stewardship programs, or simply have a place to escape the urban environment. These improved community connections with the park could result in an impact that is long term, minor to moderate, and beneficial for the local gateway communities and adjacent counties.

In addition, a comprehensive education and stewardship program would be developed to engage the public in natural and cultural stewardship issues and educate them about park resources and the threats to their preservation. With more and more residents of the community becoming more aware and engaged in these important issues, communities could benefit as residents and organizations take actions that move toward sustainability, decrease waste and pollution, and other measures that could contribute to improvements to the community's quality of life. This education and stewardship effort would be pursued in all alternatives, resulting in an impact that could be long term, minor, and beneficial in the context of the local gateway communities and three adjacent counties.

All actions that are common to all alternatives would continue to improve NPS efforts at maintaining a healthy and productive relationship with American Indian communities in the area. These efforts would codify and continue the park's policy to work with Coast Miwok and Ohlone communities in activities related to cultural resource management, interpretation and education, and the revitalization of community and tradition. This effort to maintain and improve communication with the American Indians in the region would be pursued in all alternatives, resulting in an impact that would be long term, minor, and beneficial for the local gateway communities, adjacent counties, and the Bay Area in its entirety.

The actions common to all alternatives maintain a strong commitment and strategy for using park partnerships as a tool to provide park programs, preservation activities, and community engagement in park issues while also contributing to the success of the park partner organizations and agencies. For the National Park Service, this commitment would provide a cost-effective way to enhance park services, improve visitor opportunities, and engage the community. For the various partners, this commitment and strategy would help build and expand organization success and outreach. This emphasis on partnerships would also increase programs and opportunities for the public to enjoy, which could increase the quality of life for local residents. This effort would be maintained and improved in all alternatives, resulting in an impact that would be long term, moderate, and beneficial for the local gateway communities. The impact would be long term, minor to moderate, and beneficial for the three adjacent counties.

In addition to the actions described in the section "Actions Common to All Alternatives," each alternative also includes a proposed action that would ultimately close the Shelldance Nursery (a commercial operation in Pacifica). This may be considered an adverse impact to quality of life for some community members who have actively

visited the nursery in the past. In addition, this closure could be considered an adverse impact to local economy due to job loss, sales tax revenue loss, and the loss of the multiplier effect of the business monies and its employee salaries. The collective result would be an impact that is long term, minor, and adverse for the local gateway communities. The impact to the three adjacent counties would be negligible. However, it should be noted that the programs and facilities that may eventually replace the nursery would likely offset some of these impacts by creating employment and community involvement opportunities.

Conclusion. The overall impact to the social and economic environment from actions that are common to all alternatives could be long term, minor to moderate, and beneficial with an affected area that ranges from the local gateway communities to the overall Bay Area. The beneficial impacts would result from the policies and guidance for boundary changes, climate change, ocean stewardship, museum collections, and partnership strategy. Improved parkland accessibility via multimodal transportation and regional trail systems would also yield beneficial impacts by enhancing connections between communities and the park. The park staff commitments to the American Indian community and park partners increase the connections and opportunities in preserving park resources and providing visitor opportunities. All these actions contribute to improving the quality of life and local economy.

The closure of Shelldance Nursery would have a long-term, minor, adverse impact to the local gateway community.

TRANSPORTATION

Analysis. Common to all areas are improved wayfinding systems that include effective directional signs, site identification, and other wayfinding signs that would facilitate safe and efficient access by all modes of transportation.

Marin County

In terms of transportation improvements, actions that are common to all alternatives would pursue multimodal transportation access opportunities to additional park sites. One example of this pursuit is the National Park Service collaboration with the Water Emergency Transportation Authority in developing multiple park access points to this Bay Area ferry system (e.g., between Fort Baker, Fort Mason, the Presidio, and potentially other park sites).

In the southwest coast area (Muir Beach to Point Bonita), beach and trail access to Muir Beach would be improved while preserving the area's natural setting. Regional trail connections would be enhanced; where possible, trail improvements would connect to the California Coastal Trail. Cumulatively, these measures would provide a long-term, minor to moderate, beneficial impact on visitor access to the park through improved trails.

Increased transit, including increased Muir Woods Shuttle service, would reduce congestion, minimize impacts on natural resources, and provide a way to get to the beach without a car. A new and increased transit service could also reduce parking demand within park locations, increasing it at transit access points adjacent to or outside of park lands. Increased transit would yield a long-term, moderate, beneficial impact to transportation by increasing the number and capacity of connections and availability of non-auto modes of travel.

The park staff would also continue to work with the community and Marin County to manage parking and reduce traffic in Stinson Beach using congestion management tools. In the developed beach area, the parking lot would be replaced by a more sustainable parking facility. This would have a long-term, minor to moderate, beneficial impact on visitor access to the park, depending on the success of the congestion management efforts. Also at Stinson Beach, the park staff would

explore ways to improve non-auto access to the beach, such as promoting public transportation on weekends during the peak season.

Park managers would work with Marin County and state parks to explore realignment of Muir Woods Road to reduce impacts on Redwood Creek. A realignment of Muir Woods Road would have a short-term, moderate, adverse effect on access to the monument for the duration of construction activities.

San Francisco County

All action alternatives for San Francisco County include the following transportation measures:

Trails would be improved to China Beach and Fort Funston. Safer and more direct trail access to East Fort Miley would be created. The trail system in Lands End would be improved to provide access to the shoreline and vistas, as well as connections to the community and adjacent park areas. All of these measures, both individually and cumulatively, would result in a long-term, minor, beneficial impact on circulation both to and within these park areas.

At Upper Fort Mason the visitor circulation and wayfinding improvements would be implemented in response to new adjacent bus transit and ferry connections. This would have a long-term, minor, beneficial impact on connecting people arriving by transit to this site.

At Ocean Beach the park would collaborate with the City of San Francisco to enhance the Ocean Beach corridor with improved amenities including improved parking facilities. This may have a long-term, minor, beneficial impact on the transportation system by increasing parking availability.

San Mateo County

All action alternatives for San Mateo County would include improvements to connect park lands to local communities, improve trails between and within park sites, and add trailheads and parking with improved wayfinding. Specific common improvements include new or improved trails provided along the beach, dunes, and cliffs extending from San Francisco's Fort Funston south to Mussel Rock. Also, modest visitor access facilities (trails, trailheads) to beaches, scenic overlooks, and along the California Coastal Trail between Thornton State Beach to south of Mussel Rock, would be added. Possible trail improvement at Milagra Ridge could include connections to Oceana Boulevard, the Pacific Coast, Skyline Boulevard, and Sweeney Ridge. The Shelldance Nursery site would transition from a commercial nursery to an area providing a variety of visitor services including possible enhanced trailhead parking serving Sweeney Ridge and Mori Point. Access from State Route 1 and the trail connection to Mori Point would be improved. The developed portion of Picardo Ranch would see trailhead and parking improvements.

Trailheads and trails would be developed and enhanced to improve accessibility and connections to the California Coastal Trail and adjacent public lands.

From Phleger Estate, trail connections to adjacent lands and the regional trail system would be pursued in collaboration with San Mateo County and San Francisco Public Utilities Commission. These connections would include the Bay Area Ridge Trail and a potential multiuse trail connection between Cañada Road and Skyline Boulevard north of the Phleger Estate.

All of these measures would provide, individually and cumulatively, a long-term, moderate, beneficial impact on accessibility of these remote sites by trails connected to neighborhoods and to larger regional trails. Improved and new trailheads, trailhead

parking, and improved directional signs, site identification, and wayfinding signs would also add considerable benefits. Long-term, minor, beneficial effects would be gained through slightly increasing parking at Shelldance Nursery and Sweeney Ridge.

Conclusion. Throughout Golden Gate National Recreation Area, there would be long-term, minor to moderate, beneficial effects on visitor connections to the park sites by land through improved and enhanced trail systems. The potential to increase the transit frequency to park sites in Marin and San Mateo counties would have a long-term, minor to moderate, beneficial impact on connectivity by transit. In San Francisco and San Mateo counties, there would be a long-term, minor to moderate, beneficial enhancement of transportation functionality through slightly increased parking for San Francisco sites and moderately increased parking for San Mateo sites. In Marin County, parking management tools, in connection with increased transit services, could result in a long-term, moderate, beneficial effect on improving access to Tennessee Valley and Stinson Beach, especially for those who do not have access to a car.

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

Analysis. There are many proposed changes identified in the "elements common to all action alternatives" section that would influence park management, operations, and facilities. While designed to contribute to the protection of resources and the enhancement of visitor opportunities, the proposed changes will achieve these ends only if staffing and operating funds are increased in accordance with the expanded services and management required to implement the alternatives. If funding and needed staffing levels are not made available when these actions are implemented, the following proposed actions would have long-term, moderate, adverse effects on park operations:

- Proposed boundary changes: Currently staff is unable to meet all of the needs of the existing land base. Additional land will require an increase in the number of park staff and an increase in facility management funds.
- Implementation of the climate change policy and the Ocean Stewardship Program: These changes would require additional staff and funds for baseline information, monitoring, and adaptive management actions; new infrastructure for alternative energy production (although some of these initial costs would result in lower costs in the long run); and additional funding and staff to implement the education aspect of these programs.
- Transportation goals and trail planning and development: water shuttle, ferry, and Bay Trail proposals would require extensive interagency collaboration and potential development related to access; these actions would require additional long-term staffing and funding increases. The park's trail goals also would require increased staffing, coordination with partners, and funding for trails and maintenance.

Many of the proposed changes identified in the "elements common to all action alternatives" would address problems associated with operations and maintenance and thereby have a positive, long-term, minor to moderate, beneficial effect on park management, operations, and facilities:

- The removal of facilities not contributing to the mission of the park would have a long-term, minor to moderate, beneficial effect on park operations. While removal of properties would require additional staff time during demolition, the long-term effect would be a reduced need for maintenance and other staff attention.

- Implementation of the park collections policy, and particularly the introduction of a curatorial and research facility for park collections, would benefit park operations. Collections would be consolidated from 15 current locations, improving access for both park staff and the public and preservation of the collections. Development of the proposed park collection facility would result in long-term, moderate, beneficial impact to park operations.
- The proposed new maintenance hubs in the Capehart residential area and in the Presidio of San Francisco would allow for reuse of existing buildings and would consolidate some maintenance needs. This would achieve noticeable efficiencies. On the other hand, the Capehart location has a potential to conflict with neighboring residents and would also cause the loss of some of the park housing units, unless the units are replaced by other housing in the park. Development of the maintenance hubs would result in long-term, moderate, beneficial impacts on operations.
- The establishment of a public safety hub at Fort Baker would allow for faster multiagency response to locations north of the Golden Gate Bridge. The hub would preserve an existing historic building and would meet space, size, function, mobility, and security requirements not currently met by available facilities. Development of the public safety hub would result in long-term, moderate, beneficial impacts on park operations.
- The park's commitment to working with partners would have a continued impact on the park's ability to complete projects and programs in all areas of park operations. Facility rehabilitation and restoration, and even maintenance, could not be accomplished at the current level without partner funding and volunteer efforts. This continued commitment would result in long-term, moderate, beneficial impacts on the operations of the park.
- Collocating offices with San Mateo County would improve efficiencies in interpretation and education as well as facility use. Collocated offices would provide a long-term, moderate, beneficial impact to the operations.
- At Alcatraz Island, the expanded maintenance area within the Quartermaster Warehouse would improve the ability to accomplish maintenance work on the island. The expansion and improvement to the maintenance area would result in a long-term, moderate, beneficial impact to operations.
- At Muir Woods National Monument, moving the maintenance operations from the Old Inn and Lower Conlon Avenue to a new facility in Kent Canyon, pending an interagency agreement, would improve efficiencies with both the monument and state park operations, reduce site impacts at Muir Woods National Monument, and provide for a more modern facility from which to base maintenance activities at the monument. The shared facility would moderately benefit operations over the long term.

Conclusion. Many of the actions common to all alternatives would result in moderate, beneficial impacts on park management, operations, and facilities. However, if funding and staffing levels are inadequate, other actions would result in long-term, major, adverse effects to park management, operations, and facilities.

GOLDEN GATE NATIONAL RECREATION AREA, INCLUDING ALCATRAZ ISLAND

NATURAL RESOURCES – PHYSICAL RESOURCES

Carbon Footprint and Air Quality

No-action Alternative

Analysis. The continuation of current conditions and management would continue to result in adverse impacts on air quality / carbon footprint. Baseline greenhouse gas (GHG) emissions (2008) for Golden Gate National Recreation Area (park lands in Marin and San Francisco counties only; no data is available for San Mateo County) are estimated at 4,891 MTCO2e. Emissions from mobile combustion represent about 50% of gross emissions.

At Alcatraz Island, mobile combustion associated with the operation of the ferry concession would continue to be the largest contributor of island GHG emissions. However, ferry service is increasingly efficient with supplemental energy from solar and wind power generation onboard. Stationary combustion associated with power generation using diesel generators would be mitigated by on-site generated renewable energy. With the construction of the solar array, 60% of the island's energy will be generated by the sun, and thereby reduce total emissions. Total GHG emissions for Alcatraz Island under the no-action alternative would be 1,927 MTCO2e.

Total gross emissions of the entire Golden Gate National Recreation Area / Alcatraz Island (excluding San Mateo) would be 6,818 MTCO2e.

Greenhouse gas emissions from visitors and NPS operations do contribute to elevated ozone and other air quality concerns. The National Park Service would continue to reduce GHG emissions by reducing energy consumption and replacing high-emitting apparatus with green technology—a beneficial impact.

Overall, when compared to background levels of air pollution and GHG emissions in the region or the nation (estimated at 6 billion in 2007), impacts on air quality from the no-action alternative would be long term, adverse, and negligible.

Conclusion. Total gross emissions of the entire Golden Gate National Recreation Area and Alcatraz Island (excluding San Mateo) would be 6,818 MTCO2e, resulting in long-term, minor to moderate, adverse impacts on the park's carbon footprint. Overall, when compared to background levels of air pollution and GHG emissions in the region or the nation (estimated at 6 billion in 2007), impacts on air quality from the no-action alternative would be long term, adverse, and negligible.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Although visitor opportunities would be expanded and enhanced under alternative 1, the levels and patterns of visitor use and travel within the park under alternative 1 would remain substantially the same as under the no-action alternative; consequently, the impacts on air quality / carbon footprint resulting from visitor use at Golden Gate National Recreation Area would be the same as under the no-action alternative.

Impacts on air quality / carbon footprint from new recreational development under

alternative 1 would result in short-term, minor, adverse impacts due to emissions associated with construction activities. Long-term, adverse impacts on air quality / carbon footprint would also be expected due to increases in energy consumption and related emissions attributed to these new facilities.

Beneficial impacts would occur from the removal of a modest number of facilities and structures that use energy for their operation and maintenance, resulting in long-term reductions in air quality emissions and the carbon footprint. Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove the facilities and reclaim the disturbed sites.

Under alternative 1, gross emissions for the three-county area of Golden Gate National Recreation Area would be increased by 4% to 5,104 MTCO2e.

At Alcatraz Island, visitor opportunities would be expanded and there would be access to more areas on the island, resulting in increased ferry transportation and visitor use. This would result in slightly increased emissions associated with the ferry concession (mobile combustion) and wastewater treatment. Emissions associated with energy use would also increase due to increases in facility usage and energy demand. Gross emissions for Alcatraz Island under alternative 1 could increase by about 14% to 2,188 MTCO2e.

The combined effect of the actions included in alternative 1 would increase the gross emissions of the entire park (the three-county area and Alcatraz Island) by 7% to 7,292 MTCO2e. This would result in long-term, minor, adverse impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 1 would increase the gross emissions of the entire park (the three-county area and Alcatraz Island) by 7% to 7,292 MTCO2e. This would result in long-term, minor, adverse impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Although visitor opportunities would be expanded and enhanced under alternative 2, the levels and patterns of visitor use and travel within Golden Gate National Recreation Area would remain substantially the same as under the no-action alternative; consequently, the impacts on air quality / carbon footprint resulting from visitor use would be the same as under the no-action alternative.

Impacts on air quality / carbon footprint from new recreational development under alternative 2 would result in short-term, minor, adverse impacts due to emissions associated with construction activities. Long-term, adverse impacts on air quality / carbon footprint would also be expected due to increases in energy consumption and related emissions attributed to these new facilities.

Beneficial impacts would occur from the removal of certain facilities and structures that use energy for their operation and maintenance, resulting in long-term reductions in air quality emissions and the carbon footprint. Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove the facilities and reclaim the disturbed sites.

Under alternative 2, gross emissions for the three-county area of Golden Gate National Recreation Area would be reduced by 4% to 4,708 MTCO2e, the lowest of all of the alternatives for the three-county area.

At Alcatraz Island, visitor opportunities would be expanded and would result in increased

ferry transportation and visitor use on the island. This would result in slightly increased emissions associated with the ferry concession (mobile combustion) and wastewater treatment. Emissions associated with energy use would also increase due to increases in facility usage and energy demand. Gross emissions for Alcatraz Island under alternative 2 would increase by about 6% to 2,050 MTCO2e, the lowest of the three action alternatives for Alcatraz Island.

The combined effect of the actions included in alternative 2 would reduce the gross emissions of the entire park (the three-county area and Alcatraz Island) by 1% to 6,758 MTCO2e, the lowest of all of the alternatives. This would result in long-term, minor, beneficial impacts on the park's carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 2 would reduce the gross emissions of the entire park (the three-county area and Alcatraz Island) by 1% to 6,758 MTCO2e, the lowest of all of the alternatives. This would result in long-term, minor, beneficial impacts on the park's carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Although visitor opportunities would be expanded and enhanced under alternative 3, the levels and patterns of visitor use and travel within the park under alternative 1 would remain substantially the same as under the no-action alternative; consequently, the impacts on air quality/ carbon footprint resulting from visitor use would be the same as under the no-action alternative.

Impacts on air quality / carbon footprint from new recreational development under alternative 3 would result in short-term, minor, adverse impacts due to emissions associated with construction activities. Long-term, adverse impacts on air quality / carbon footprint would also be expected due to increases in energy consumption and related emissions attributed to these new facilities.

Beneficial impacts would occur from the removal of certain facilities and structures that use energy for their operation and maintenance, resulting in long-term reductions in air quality emissions and the carbon footprint. Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove the facilities and reclaim the disturbed sites.

Under alternative 3, gross emissions for the three-county area of the park would be reduced by 2% to 4,799 MTCO2e.

At Alcatraz Island, visitor opportunities would be expanded and would result in increased ferry transportation and visitor use on the island. This would result in slightly increased emissions associated with the ferry concession (mobile combustion) and wastewater treatment. Emissions associated with purchased electricity would also increase due to increases in facility usage and energy demand. Gross emissions for Alcatraz Island under alternative 3 would increase by about 7% to 2,062 MTCO2e.

The combined effect of the actions included in alternative 3 would increase the gross emissions of the entire park (the three-county area and Alcatraz Island) by 1% to 6,861 MTCO2e. This would result in long-term, minor, adverse impacts on the park's carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 3 would increase the gross emissions of the entire park

(the three-county area and Alcatraz Island) by 1%, to 6,861 MTCO2e. This would result in long-term, minor, adverse impacts on the park's carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Carbon Footprint for the NPS Preferred Alternative for Golden Gate National Recreation Area (including Alcatraz Island) and Muir Woods National Monument

A description of carbon footprint impacts for the full preferred alternative (alternative 1 for Marin, San Francisco, and San Mateo counties; and alternative 3 for Alcatraz and Muir Woods) is included here and at the end of the related section for Muir Woods National Monument. The impact analysis concludes that the preferred alternative would result in total emissions of 8,979 MTCO2e, a decrease of 1% from the no-action alternative's 9,075 MTCO2e. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint.

Soils and Geologic Resources and Processes

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance of existing facilities (including structures, roads, and trails) would continue to cause parkwide impacts on soils and geologic resources due to the permanent loss and function of these resources and from erosion associated with unsustainable trails and roads (including road cuts and gullies along Conzelman Road, Milagra Ridge, and State Route 1). The impact of these activities would be long term, minor, adverse, and localized, but would occur throughout the park.

Coastal geologic resources and processes would continue to be affected by the presence of facilities and structures in geologically sensitive areas, such as at Stinson Beach (parking lot and dune interface) and Slide Ranch in Marin County, and Ocean Beach (seawall and infrastructure) and Fort Funston in San Francisco County. The facilities and land uses present at these areas, as well as NPS management activities to protect infrastructure, would continue to inhibit natural shoreline processes. The impact of these activities would be long term, moderate, adverse, and localized.

Projects to improve natural habitat values and ecosystem function, such as those at Big Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin Headlands (gully repair), in offshore marine areas (sand deposits and management), and at Land's End and Mori Point (trail/road removal and repair), would have beneficial effects on soils and geologic resources and processes because they would improve or restore the functionality of natural processes—the impact would be long term, minor to moderate, beneficial, and localized.

Recreational use would continue to cause compaction and erosion of soils, resulting in long-term, minor, adverse, localized impacts throughout the park.

Park Service efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on geologic resources and soils due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and parkwide.

At Alcatraz Island, the presence and maintenance of existing structures on Alcatraz Island would continue to destabilize slopes and affect natural erosion and geologic processes. The National Park Service would continue to implement building stabilization techniques that would result in long-term,

minor, adverse, localized impacts on soils and geologic resources and processes.

Conclusion. Overall, the impact to geologic resources and soils from the no-action alternative would be long term, range from minor adverse to moderate beneficial, and be localized and parkwide. Adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and education and stewardship activities.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of soils and geologic resources and processes. The majority of park lands would be managed as natural zones.

Alternative 1 would reduce soil erosion by eliminating unsustainable trails and roads, resulting in long-term, minor, beneficial, localized impacts.

The removal of facilities or structures, and the reclamation of disturbed building sites (such as at the Capehart housing area and Tennessee Valley in Marin County; Fort Miley and Fort Funston in San Francisco County; and Milagra Ridge, Mori Point, and Phleger Estate in San Mateo County); dune restoration at Fort Funston; managed retreat from sea level rise at Ocean Beach; and creek restoration at Eastkoot Creek, Capehart Creek, and Lower Redwood Creek in Marin County where about 8 acres would be improved and restored to natural conditions, and at Rancho Corral de Tierra in San Mateo County would improve soil function and integrity and restore natural geologic processes. The impact of these activities would be long term, minor to moderate, beneficial, and localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur during construction activities.

Visitor access and use at specific park sites would be expanded under alternative 1, resulting in increased soil compaction and erosion; however, compared to use patterns under the no-action alternative, only slight adverse impacts would be expected. Most impacts would be contained within defined visitor use areas and on trails. The impact, especially in areas off-trail, would be long term, minor, adverse, and localized. This impact would occur in areas throughout the park.

New recreational development would have long-term, adverse, localized impacts on soils and geologic resources throughout the park due to the permanent loss of soil function and integrity resulting from new development and increased erosion from facility construction and maintenance. The intensity of the impact would range from negligible to moderate. In some areas (such as at Upper Fort Mason, Fort Miley, China Beach, and Fort Funston in San Francisco County and Shelldance Nursery in San Mateo County) adverse impacts would be negligible to minor because the development would occur in previously developed or disturbed sites. In other areas (such as at Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley and along State Route 1, Conzelman, McCullough, and Bunker Roads in Marin County and at Sweeney Ridge and Rancho Corral de Tierra in San Mateo County) new development would cause minor to moderate adverse impacts on soils and geologic resources because these areas are undeveloped and the impacts would be new.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, the existing structures would be rehabilitated, which would require

additional stabilization measures that would impact natural geologic processes. This would result in long-term, minor, adverse, localized impacts.

Conclusion. The elimination of unsustainable roads and trails would reduce soil erosion, resulting in long-term, minor, beneficial, localized impacts on soils. The removal of facilities and structures would result in long-term, minor to moderate, beneficial, localized impacts, although new recreational development would have long-term, adverse, localized impacts on soils and geologic resources. During the removal or construction period, short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur.

Overall, adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance, the restoration of disturbed sites and creeks, and improved resource understanding and public support.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would assist in the protection of soils and geologic resources and processes. The majority of park lands would be managed as natural and sensitive resource zones.

Alternative 2 would reduce soil erosion by eliminating unsustainable trails and roads and removing and restoring unneeded management roads, resulting in long-term, minor to moderate, beneficial, localized impacts.

Beneficial impacts on soils and geological resources and processes from the removal of facilities/structures and restoration of natural areas would be greater than under the no-action alternative. In addition to the actions included in alternative 1, the National Park Service in alternative 2 would (1) remove portions of and restore the Capehart housing area to a natural setting, (2) relocate Slide Ranch out of a sensitive geologic hazard area, (3) work with Marin County to realign the highway and minimize impacts on Redwood Creek, and (4) work with Caltrans to further protect geologic processes on the coast of Marin County, including the potential abandonment of a small segment of State Route 1. These activities would restore soil function, integrity, and natural geologic processes; when combined with those actions included in alternative 1, would result in long-term, moderate, beneficial, and localized impacts.

Impacts from visitor access and use at specific park sites would be the same as those described in alternative 1, resulting in long-term, minor, adverse, and localized impacts.

The type of adverse impacts associated with new recreational development under alternative 2 would be the same impacts as described in alternative 1 although the amount and distribution of proposed facilities is reduced, resulting in minor, adverse, localized impacts on soils and geologic resources.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, the existing structures would be stabilized, but coastal erosion processes would be allowed to evolve naturally. This would result in long-term, minor, beneficial, localized impacts on geologic resources and processes.

Conclusion. The elimination of unsustainable trails and roads and the removal and restoration of unneeded management roads, would reduce soil erosion, resulting in long-term, minor to moderate, beneficial, localized impacts.

The removal of facilities/structures and restoration of a large number of natural areas

would result in long-term, moderate, beneficial, and localized impacts.

Overall, adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance, and the restoration of disturbed sites and creeks.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of soils and geologic resources and processes. The majority of park lands would be managed as natural zones.

Impacts on soils from reducing soil erosion would be the same as described in the alternative 1, resulting in long-term, minor, beneficial, localized impacts.

Impacts on soils and geologic resources and processes from the removal of facilities and structures and the reclamation of disturbed building sites under alternative 3 would be the same as those described in alternative 1, resulting in long-term, minor to moderate, beneficial, and localized impacts.

Impacts from visitor access and use at specific park sites would be the same as those described in alternative 1, resulting in long-term, minor, adverse, and localized impacts.

Impacts from new recreational development under alternative 3 would generally be the same as those described in alternative 1. Although the distribution of new development may be slightly different, the resulting impact to soils and geologic resources and processes would remain long term, minor to moderate, adverse, and localized.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, the existing structures would be rehabilitated, which would require additional stabilization measures that would impact natural geologic processes. This would result in long-term, minor, adverse, localized impacts.

Conclusion. The reduction in soil erosion and the reclamation of disturbed building sites would result in long-term, minor to moderate, beneficial, localized impacts. Impacts from new recreational development would be long term, minor to moderate, adverse, and localized.

Overall, beneficial impacts would occur from trail and road maintenance, the restoration of disturbed sites and creeks, and improved resource understanding and public support. Adverse impacts would occur from new recreational development and expanded visitor use.

Water Resources and Hydrologic Processes

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance (or lack of maintenance in some cases) of existing facilities (including structures, roads, and trails) would continue to cause localized impacts on water quality due to pollution from urban runoff and turbidity from soil erosion. The impact of these activities would be long term, minor to moderate, adverse, and localized, but would occur throughout the park.

Structures would remain in the 100-year floodplains of several creeks resulting in adverse impacts. In Marin County, park facilities at Stinson Beach (parking lots and picnic areas) and Muir Beach (parking lot and Pacific Way) would continue to affect

floodplain function along Easkoot Creek and Redwood Creek. In San Mateo County, horse stables in the lower portion of the Rancho Corral de Tierra property are in the San Vicente Creek floodplain and would continue to affect floodplain function. Retention of these facilities would continue to slightly affect the flow of water during floods and the capacity of the floodplain to store floodwaters. The impact would be long term, minor, adverse, and localized.

Projects to improve natural habitat values and ecosystem function, such as those at Big Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin Headlands (gully repair), and Land's End and Mori Point (trail/road removal and repair), would have beneficial effects on water resources and hydrologic processes because they would improve and restore the function and integrity of natural hydrologic systems—the impact would be long term, minor to moderate, beneficial, and localized.

Recreational use would continue to cause erosion of soils resulting in turbidity. Vehicle use at parking areas and on roadways throughout the park would continue to affect water quality from runoff that contains chemical contaminants. These activities would result in long-term, minor, adverse, localized impacts on water quality throughout the park.

Park Service efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and parkwide.

At Alcatraz Island, visitor use and NPS operations (including removing bird guano) would continue to contribute nutrients and sediment to the adjacent marine waters through runoff. Runoff from impervious surfaces on the island, such as existing structures, would also contribute to this issue. Vessels, primarily the passenger ferry, traveling to the island would impact water quality by introducing hydrocarbons and other chemicals into the Bay, as well as increasing turbidity near the docking station on the island. These activities would result in long-term, minor, adverse, localized impacts on water quality.

Conclusion. The continued existence of structures and facilities in some areas of the park would have long-term, minor to moderate, adverse, and localized impacts on water resources and hydrologic processes.

Projects to improve natural habitat values and ecosystem function would have long-term, minor to moderate, beneficial, and localized impacts on water resources and hydrologic processes.

Generally, adverse impacts would occur from the continued presence and maintenance of existing facilities, the continued presence of the existing volume of vehicular traffic, and continued patterns of visitor use. Beneficial impacts would occur from restoration of natural areas and from education and stewardship activities.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. The majority of park lands would be managed as natural zones.

Impacts on water-related resources from the continued presence and maintenance of existing facilities (including structures, roads, and trails) under alternative 1 would be less than the no-action alternative because impacts on water quality caused by erosion from unsustainable trails and roads would be reduced. Alternative 1 would develop a sustainable trail system and remove and restore unneeded and unsustainable roads

and trails, as well as maintain all trails and roads. These activities would result in long-term, minor to moderate, beneficial, localized impacts on water quality. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction activities.

The removal of facilities and structures and the reclamation of disturbed building sites (such as at the Capehart housing area and Tennessee Valley in Marin County) and dune restoration at Fort Funston would improve natural hydrologic processes. The impact of these activities would be long term, minor to moderate, beneficial, and localized.

Beneficial effects on stream character, water quality, wetlands, floodplains, and watershed processes would occur from creek restoration at Stinson Beach (Eastkoot Creek), Rancho Corral de Tierra, and in the Lower Tennessee Valley. At Stinson Beach, restoration projects would include removal of nonnative invasive vegetation and the restoration and enlargement of riparian habitat. In Lower Tennessee Valley, creek projects would include the restoration of riparian habitat, improvements to hydrologic functions, and the removal of the dam at Tennessee Pond. At Rancho Corral de Tierra, projects would include extensive removal of nonnative invasive vegetation, riparian habitat restoration, and possibly more extensive creek channel restoration that could reconnect steelhead habitat with the ocean and restore many functional components of the natural hydrologic regime. However, these more substantial creek restoration efforts at Rancho Corral de Tierra would likely be dependent on the success of park partnerships, since other entities have proprietary interests in portions of the creek channel and water rights. If these more substantial efforts are accomplished, the overall stream character and function would be improved by creating a more natural watercourse that would reduce the potential for erosion, re-create floodplain connectivity, restore wetland functions, and contribute to improvements in restoring watershed processes and water quality. Overall, the impact of these creek restoration activities would be long term, minor to moderate, beneficial, and localized.

Impacts on floodplains would be the same as those described in the no-action alternative.

Visitor access and use would be expanded throughout the park under alternative 1, potentially resulting in some increase in erosion along trails and at primary visitor use areas that could have impacts on water quality—the impact would be long term, negligible to minor, adverse, and localized.

New and/or improved recreational development—including new visitor facilities and amenities at (1) Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley along State Route 1 and Conzelman, McCullough, and Bunker Roads in Marin County; at (2) Upper Fort Mason, Fort Miley, China Beach and Fort Funston in San Francisco County; and at (3) Milagra Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo County—would have short-term, negligible to minor, adverse, localized impacts on water quality from increased erosion and sedimentation, and the potential for chemical contamination resulting from inadvertent chemical spills from heavy equipment at construction sites. Similar impacts on water quality could occur over the long term due to the increased potential for urban pollutants to runoff from parking lots and other developed features.

In some areas (such as at Shelldance Nursery in San Mateo County) adverse impacts would be negligible to minor because the development would occur in previously developed or disturbed sites. In other areas (such as at Rancho Corral de Tierra in San Mateo County), adverse impacts on water resources would be minor to moderate because new development would occur in undisturbed sites.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, impacts from visitor use and NPS operations (including removing bird guano) would be greater than those described in the no-action alternative because greater emphasis would be placed on visitor access and the cleaning of more primary use areas, resulting in increased potential for water quality impacts such as nutrient and sediment inputs into marine waters. Turbidity and chemical contamination may also increase due to increased vessel traffic in the Bay. Impacts from these activities would result in long term, minor to moderate, adverse, localized impacts on water quality.

Conclusion. The removal and reclamation of facilities and structures, the re-creation of natural hydrologic regimes, and restoration of watershed processes would result in long-term minor to moderate, beneficial impacts on water quality, while the construction, maintenance or removal of trails and facilities would have short-term, minor to moderate, adverse impacts on water quality.

There would be long-term minor to moderate, adverse, localized impacts on water quality on Alcatraz Island resulting from cleaning of primary visitor use areas and increased vessel traffic in San Francisco Bay.

Generally, adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance and the restoration of disturbed sites and creeks.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. The majority of park lands would be managed as natural and sensitive resource zones.

Alternative 2 would reduce impacts on water quality by eliminating erosion from unsustainable trails and unneeded management roads, resulting in long-term, minor to moderate, beneficial, localized impacts. Short term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction activities.

The magnitude of beneficial impacts associated with the removal of facilities/ structures and the reclamation of disturbed building sites would be greater than under the no-action alternative. In alternative 2, in addition to the actions included in alternative 1, the National Park Service would completely remove and restore the Capehart housing area; work with Marin County to realign the highway and minimize impacts on Redwood Creek; and could remove or relocate all horse stables from the Rancho Corral de Tierra property. These activities would improve natural hydrologic processes; when combined with the actions included in alternative 1, they would result in long-term, moderate, beneficial, and localized impacts on water resources and hydrologic processes.

Beneficial effects on stream character, water quality, wetlands, floodplains, and watershed processes would occur from creek restoration at Stinson Beach (Eastkoot Creek) and especially at Rancho Corral de Tierra. Incised creek banks that adversely impact floodplain function by restricting creek sinuosity would be restored, thereby expanding and enhancing wetlands and improving water quality. The overall stream character and function would be improved by creating a more natural watercourse that would reduce the potential for erosion, re-create the natural hydrologic regime, and contribute to improvements in restoring watershed processes and regional water quality. Collaborating with municipalities to increase water storage would benefit water resources by increasing water quantity with park streams. The impact of these activities would be long term, moderate, beneficial, and localized.

Impacts on floodplains would be less than those described in the no-action alternative because the removal of the lower horse stable from the 100-year floodplain of San Vicente Creek at Rancho Corral de Tierra would improve floodplain function and integrity—resulting in a long-term, minor, beneficial, localized impact.

Impacts from visitor access and use would be the same as those described in alternative 1, resulting in long-term, minor, adverse, and localized impacts.

The magnitude of adverse impacts associated with new recreational development under alternative 2 would be less than under alternative 1 because the amount and distribution of proposed facilities is reduced. However, the types of impacts would generally be the same and would result in minor, adverse, localized impacts on water quality and water resources.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, impacts from visitor use and NPS operations would be less than those described in the no-action alternative because greater portions of the island would be left to natural reclamation and the focus on maintaining visitor use areas (including removing bird guano) would be reduced. Therefore, nutrient and sediment inputs into marine waters would be reduced. Water quality impacts associated with vessel traffic would be expected to be the same as in the no-action alternative. These actions would result in long-term, minor, beneficial, localized impacts on water quality.

Conclusion. The removal of unsustainable trails and unneeded management roads, removal of facilities and structures, creek restorations, realignment of small sections of roadway, and the relocation of horse stables away from adjacent creeks would result in long-term, minor to moderate, beneficial impacts on water resources, wetlands, floodplains, and overall hydrologic processes. However, the construction, maintenance, or removal activities associated with these changes would have short-term, minor to moderate, adverse impacts on water quality.

Leaving greater portions of Alcatraz Island to natural reclamation and reducing the visitor use area on the island would result in long-term, minor, beneficial, localized impacts on water quality The visitor use area would be reduced providing for a larger area of the island to naturally reclaim and thereby reduce water quality impacts caused by human use.

Generally, adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance, and the restoration of disturbed sites, creeks, and floodplains.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. The majority of park lands would be managed as natural zones.

As described in alternative 1, impacts on water quality from reducing erosion from unsustainable trails and roads would be reduced when compared to the no-action alternative, resulting in long-term, minor to moderate, beneficial, localized impacts. Short term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction activities.

As described in alternative 1, the removal of facilities/structures and the reclamation of disturbed building sites would result in long-term, minor to moderate, beneficial, and localized impacts on water resources and hydrologic processes.

As described in alternative 1, creek restoration would result in enhanced wetlands, improved water quality, and overall improvements to stream character and function. The impact of these activities would be long term, moderate, beneficial, and localized.

Impacts on floodplains would be the same as those described in the no-action alternative.

Visitor access and use would be expanded under alternative 3, potentially resulting in some increase in erosion along trails and at primary visitor use areas that could have impacts on water quality—the impact would be long term, negligible to minor, adverse, and localized.

Impacts from new recreational development would generally be the same as described in alternative 1, resulting in short-term, negligible to minor, adverse, localized impacts on water quality from increased erosion and sedimentation, and the potential for chemical contamination resulting from inadvertent chemical spills from heavy equipment at construction sites. Similar impacts on water quality could occur over the long term due to the increased potential for urban pollutants to runoff from parking lots and other developed features.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

At Alcatraz Island, impacts from visitor use and NPS operations (including removing bird guano) would be greater than those described in the no-action alternative because greater emphasis would be placed on visitor access and cleaning primary use areas, resulting in increased potential for water quality impacts such as nutrient and sediment inputs into marine waters. Water quality impacts, such as turbidity and chemical contamination from increased vessel traffic in the Bay, may also increase. Additional impacts associated with the scale of historic structure rehabilitation and facility improvements under alternative 3 could result in increased impacts on water quality. Impacts from these activities would result in long-term, minor to moderate, adverse, localized impacts on water quality.

Conclusion. The removal and natural restoration of unsustainable trails and unneeded management roads, the removal of facilities and structures, and creek restoration efforts would result in long-term, minor to moderate, beneficial impacts on water resources and hydrologic process. However, the construction, maintenance, or removal of trails and facilities would have short-term, minor to moderate, adverse impacts on water quality.

The scale of historic structure rehabilitation and facility improvements on Alcatraz Island could result in increased impacts on water quality. Cleaning the primary visitor use areas and increased vessel traffic in San Francisco Bay would result in long-term minor to moderate, adverse, localized impacts on water quality on Alcatraz Island.

Adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance and the restoration of disturbed sites and creeks.

NATURAL RESOURCES – BIOLOGICAL RESOURCES

Habitat (vegetation and wildlife)

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance (or lack of maintenance in some cases) of existing facilities (including structures, roads, and trails) would continue to cause localized impacts on vegetation and wildlife habitat by fragmenting natural areas and increasing the potential for nonnative plant species to displace native species and affect native habitat. Maintaining facilities and structures in

coastal interface areas would continue to disrupt natural shoreline habitat values resulting in impacts on species that depend on these areas and diminished biodiversity in general. The impact of these activities would be long term, minor to moderate, adverse, and localized, but would occur throughout the park.

Projects to improve natural habitat values and ecosystem function, such as those at Big Lagoon (estuarine restoration), Lower Redwood Creek (wetland restoration), Marin Headlands (gully repair), Kirby Cove (45 acres of nonnative plant removal), Fort Funston (20 acres of nonnative plant removal), in offshore marine areas (sand deposits and management), and at Land's End and Mori Point (trail/road removal and repair), would have beneficial effects on vegetation, wildlife, and wildlife habitat because they would reduce the impacts of nonnative plant species, improve or restore the functionality of natural processes, and improve specific habitat components that are required by the affected species. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. Rehabilitating disturbed sites would improve the integrity and diversity of habitats available to aquatic and terrestrial organisms. Ongoing vegetation management and monitoring of plants and wildlife allows the National Park Service to improve native habitat conditions. The use of spatial and temporal closures would continue to protect wildlife and wildlife habitat. The impact of these activities would be long term, minor to moderate, beneficial, and localized.

Recreational use would continue to reduce habitat integrity by trampling plants, introducing and increasing the spread of nonnative species, causing disturbance (flushing and displacement) to animals, and increasing the potential for human-wildlife conflict resulting from habituation due to the presence of humans and the introduction of unnatural food sources. Recreational use also generates noise and unnatural light sources that affect wildlife. These activities would result in long-term, minor to moderate, adverse, localized impacts throughout the park.

Park Service efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on vegetation and wildlife habitat due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and parkwide.

Waterbirds would continue to be affected by visitor use at Alcatraz Island (day use, special events, etc.) and NPS operations, including managing gulls and other waterbirds in visitor use areas. Boat traffic in the marine waters adjacent to the island would continue to cause disturbance to nesting birds. These activities would result in long-term, minor, adverse, localized impacts. At the same time, the National Park Service would continue to protect nesting habitat and bird use areas on the island using seasonal closures, especially the preferred habitats on the western perimeter of the island. This would result in long-term, moderate, beneficial, localized impacts on waterbird populations. Given the combined effects of disturbance and protective actions, the numbers of breeding pairs of waterbirds on the island have steadily increased over the last decade. This trend is expected to continue. Also, though protected by resource management efforts, waterbird nesting and foraging habitat at Bird Island and Point San Pedro would continue to be adversely affected by intermittent disturbances from various forms of land-based and water-based visitor use activities (e.g., sea kayaking, hiking, etc.). Collectively, impacts on waterbirds as a result of the no-action alternative would be long term, minor to moderate, adverse, and localized.

Conclusion. The conditions related to existing facilities would continue to cause fragmentation of habitat and the potential for nonnative plant species to displace native species. The continuation of current recreational use also would reduce habitat

integrity. The impacts would be long term, minor to moderate, adverse, and localized, but would occur throughout the park.

Habitat restoration efforts and educational and participatory stewardship programs would result in long-term, minor to moderate, beneficial impacts that would occur both at the local level (habitat restoration) and parkwide (stewardship programs).

Impacts on waterbirds would be long term, minor to moderate, adverse, and localized. Generally, adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and ongoing management and monitoring activities.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. The majority of park lands would be managed as natural zones.

Sensitive resource zones at Bird Island and Point Bonita Cove would serve to protect seabirds and pinnipeds, a beneficial impact when compared to the no-action alternative.

The impacts on vegetation and wildlife from the continued presence and maintenance of existing facilities (including structures, roads, and trails) under alternative 1 would be less than the no-action alternative because impacts on vegetation and wildlife habitat caused by erosion from unsustainable trails and roads would be reduced. Alternative 1 would develop a sustainable trail system and eliminate unneeded and unsustainable roads and trails, as well as maintain all trails and roads. Impacts on native habitat from fragmentation and nonnative species would be reduced. These activities would result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

The removal of facilities/structures and the reclamation of disturbed building sites (such as at the Capehart housing area and Tennessee Valley in Marin County); dune restoration at Fort Funston; vegetation restoration on old roads and trails at Phleger Estate; and extensive nonnative plant removal at Rancho Corral de Tierra. Creek restoration at Stinson Beach (Eastkoot Creek), and especially at Rancho Corral de Tierra would improve vegetation and wildlife habitat by improving habitat structure and the diversity of habitats available to support various species' needs. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. The impact of these activities would be long term, minor, beneficial, and localized.

Visitor access and use would be expanded under alternative 1, potentially resulting in additional impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long term, minor to moderate, adverse, and localized.

New and/or improved recreational development including new visitor facilities and amenities at (1) Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley along State Route 1 and Conzelman, McCullough, and Bunker Roads in Marin County; at (2) Upper Fort Mason, Fort Miley, China Beach, and Fort Funston in San Francisco County; and at (3) Milagra Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo County would have long-term, minor to moderate, adverse, localized impacts on vegetation and wildlife due to the permanent loss of plants and wildlife habitat. Short-term, minor, adverse impacts on vegetation would also occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the

natural habitat would be reclaimed. Similarly, short-term adverse impacts on wildlife, such as disturbance, would occur during construction. The stabilization of Pier 4 at Fort Mason would result in impacts (habitat disturbance during construction) to marine resources—the impact would be short term, minor, adverse, and localized.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative. Similarly, impacts from vegetation and wildlife management and monitoring activities under alternative 1 would be the same as those described in the no-action alternative. However, the establishment of a native plant nursery would provide additional capacity to improve native vegetation and wildlife habitat and expand stewardship efforts—resulting in a beneficial impact.

At Alcatraz Island, adverse impacts on waterbirds under alternative 1 would be greater than those described in the no-action alternative because new visitor amenities (namely food service, modest overnight accommodations, and special events) and potential increased access to the island would cause increased disturbance to nesting waterbirds and human-wildlife conflict. However, no known state- or federal-listed threatened or endangered bird species inhabit Alcatraz Island.

Additionally, historic restoration of the Parade Grounds on the island and removal of the ruins would cause habitat loss and disturbance to waterbird habitat. Management of the Parade Ground ruins would affect the island's western gull colony more than other species, and could result in major adverse effects to the western gull. However, population viability would be maintained. Expanded visitor use of Agave Trail would affect use of the tidepools by foraging birds. As in the no-action alternative, the National Park Service would continue to protect nesting and roosting habitats and initiate habitat enhancements in other areas of the island where possible—resulting in beneficial impacts. The marine waters within the vicinity of the colonial nesting birds would be closed to boating during the breeding season, resulting in beneficial impacts. Given the combined effects of disturbance and protective actions, the numbers of breeding pairs of waterbirds on the island could decrease over time depending on the frequency and intensity of expanded visitor activity. Collectively, these activities would result in long-term, moderate, adverse, localized to regional impacts on waterbirds on Alcatraz Island, and could result in major adverse impacts on western gulls.

However, under alternative 1, the protection of waterbird nesting and foraging habitat at Bird Island would be increased relative to the no-action alternative. The designation of a sensitive resources zone in these areas would protect waterbird breeding and foraging and land- and water-based visitor access would be highly managed. Also, the natural zone at Point San Pedro would be managed to help improve protection of waterbird nesting colonies from visitor use activities. These more protective management measures would result in long-term, minor to moderate, beneficial, and localized impacts on waterbirds at Bird Island and Point San Pedro.

Conclusion. The development of a sustainable trail system and elimination of unneeded and unsustainable roads and trails, the removal of facilities/structures with reclamation of disturbed building sites, and habitat restoration efforts would result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

The expansion of visitor access and use and the development of new or improved recreational facilities would result in long-term, minor to moderate, adverse, and localized impacts. The construction activities related to these developments would result in short-term, minor, and adverse impacts.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action

alternative. Similarly, impacts from vegetation and wildlife management and monitoring activities under alternative 1 would be the same as those described in the no-action alternative. However, the establishment of a native plant nursery would provide additional capacity to improve native vegetation and wildlife habitat and expand stewardship efforts—a beneficial impact.

Habitat restoration efforts and educational and participatory stewardship programs would result in long-term, minor to moderate, beneficial impacts that would occur both at the local level (habitat restoration) and parkwide (stewardship programs). An additional beneficial impact would result from the establishment of a native plant nursery.

Impacts on waterbirds on Alcatraz Island would be long-term, moderate, adverse, and localized to regional, and could result in major adverse impacts on western gulls on Alcatraz Island. However, gull population viability would be maintained. Impacts on waterbird nesting in other coastal areas of the park (Bird Island and Point San Pedro) would be long-term, minor to moderate, beneficial, and localized. If it becomes evident that implementation of the actions in alternative 1 at both the Parade Ground and at the north end of Alcatraz Island (in the vicinity of the New Industries / Model Industries Buildings) have the potential to have major adverse effects and would result in long-term or permanent loss of waterbird nesting colonies (with the exception of western gulls), the park staff would use adaptive management techniques and take the necessary measures to ensure the continued viability of breeding populations of these species on the island. These steps could include allowing only nonbreeding season access to the Parade Ground or limiting the types and scale of uses in the north end of the island during nesting seasons. These actions would ensure that adverse impacts do not exceed the moderate intensity threshold.

Generally, adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from natural resource restoration, ongoing management and monitoring activities, and the introduction of protective park management zones.

Alternative 2: Preserving and Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. The majority of park lands would be managed as natural and sensitive resource zones.

Sensitive resource zones at Bird Island and Point Bonita Cove would serve to protect seabirds and pinnipeds, a beneficial impact when compared to the no-action alternative.

The impacts on vegetation and wildlife from the continued presence and maintenance of existing facilities (including structures, roads, and trails) under alternative 2 would be less than the no-action alternative because impacts on vegetation and wildlife habitat caused by erosion from unsustainable trails and roads would be reduced. Alternative 2 would develop a sustainable trail system and eliminate and rehabilitate unneeded trails and management roads, as well as maintain all trails and roads. Impacts on native habitat from fragmentation and nonnative species would be reduced. These activities would result in long-term, minor to moderate, beneficial, localized to parkwide impacts on vegetation and wildlife.

The magnitude of beneficial impacts associated with the removal of facilities/ structures and the reclamation of disturbed building sites, as well as from creek restoration, would be greater than under the no-action alternative. In alternative 2, in addition to the actions included in alternative 1, the National Park Service would completely remove and restore the Capehart housing area; work with Marin County to realign the highway and minimize impacts on Redwood Creek; remove structures and restore about 10

acres at Slide Ranch, as well as convert about 3.5 acres of existing farmland to native habitat; restore about 18.0 acres of uplands at Golden Gate Dairy; remove the nonnative forest and improve natural habitat conditions at Fort Miley; and improve or remove all horse stables from the Rancho Corral de Tierra property. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. These activities would also improve habitat structure and the diversity of habitats available to support various species' needs, and when combined with those actions included in alternative 1, would result in long-term, moderate, beneficial, and localized to parkwide impacts.

Visitor access and use would be expanded under alternative 2, potentially resulting in additional impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long term, minor, adverse, and localized.

The type of adverse impacts associated with new recreational development under alternative 2 would be the same impacts as described in alternative 1 although the number and distribution of proposed facilities is reduced resulting in minor, adverse, localized impacts on vegetation and wildlife habitat.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative, with one exception. Partnering with other agencies to manage visitor access and promote restoration and habitat management as part of the UNESCO Golden Gate Biosphere Reserve would elevate this issue and could result in benefits to vegetation and wildlife habitat. Impacts from vegetation and wildlife management and monitoring activities under alternative 2 would be the same as those described in the no-action alternative. The establishment of a native plant nursery would provide additional capacity to improve native vegetation and wildlife habitat and expand stewardship efforts—resulting in a beneficial impact.

At Alcatraz Island, adverse impacts on waterbirds under alternative 2 would be fewer than those described in the no-action alternative because waterbird nesting and use areas would be allowed to expand and conflicts with visitor use and NPS operations would be reduced. Visitor use areas would be expanded and visitor activities would be highly controlled on the island. The Model Industries Building and New Industries Building would be stabilized and would provide additional habitat to nesting birds. Park operations near the power plant would be modified to reduce conflicts with nesting birds. The marine waters within the vicinity of the colonial nesting birds would be closed to boating during the breeding season, resulting in beneficial impacts. The allowance of modest overnight accommodations on the Island would increase the potential for human-wildlife conflict, an adverse impact. As in the no-action alternative, the National Park Service would continue to protect nesting and roosting habitats and initiate habitat enhancements in other areas of the Island where possible—resulting in beneficial impacts. Given the combined effects of disturbance and protective actions, the numbers of breeding pairs of waterbirds on Alcatraz Island would be expected to be maintained or increase over time. Collectively, these activities would result in long-term, moderate, beneficial, localized impacts on waterbirds on Alcatraz Island.

Also, under alternative 2, the protection of waterbird nesting and foraging habitat at Bird Island would be increased relative to the no-action alternative. The designation of a sensitive resources zone in these areas would protect waterbird breeding and foraging and land- and water-based visitor access would be highly managed. Also, the natural zone at Point San Pedro would be managed to help improve protection of waterbird nesting colonies from visitor use activities. These more protective management measures would result in long-term, minor to moderate,

beneficial, and localized impacts on waterbirds at Bird Island and Point San Pedro.

The rehabilitation of Pier 4 at Fort Mason would result in impacts (habitat disturbance during construction) to marine resources—the impact would be short-term, minor, adverse, and localized.

Conclusion. The development of a sustainable trail system and the elimination of unneeded roads, and the removal of a large number of structures and the restoration of natural vegetation in these areas would result in long-term, moderate, beneficial, localized to parkwide impacts on vegetation and wildlife.

The expansion of visitor access and use and the development of new or improved recreational facilities would result in long-term, minor, adverse, and localized impacts. The construction activities related to these developments would result in short-term, minor, and adverse impacts.

Habitat restoration efforts and educational and participatory stewardship programs would result in long-term, minor to moderate, beneficial impacts that would occur both at the local level (habitat restoration) and parkwide (stewardship programs). Additional beneficial impacts would result from the establishment of a native plant nursery and partnering with other agencies to manage visitor access and promote restoration and habitat management as part of the UNESCO Golden Gate Biosphere Reserve.

Impacts on waterbirds on Alcatraz Island would be long term, moderate, beneficial, and localized. Impacts on waterbird nesting in other coastal areas of the park (Bird Island and Point San Pedro) would be long-term, minor to moderate, beneficial, and localized.

Generally, adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration, ongoing management and monitoring activities, and the introduction of protective park management zones.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. The majority of park lands would be managed as natural zones.

The impacts on vegetation and wildlife from the continued presence and maintenance of existing facilities (including structures, roads, and trails) under alternative 3 would be less than the no-action alternative because impacts on vegetation and wildlife habitat caused by erosion from unsustainable trails and roads would be reduced. Alternative 3 would develop a sustainable trail system and eliminate and rehabilitate unneeded and unsustainable roads and trails, as well as maintain all trails and roads. Impacts on native habitat from fragmentation and nonnative species would be reduced. These activities would result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

Natural resource restoration includes the dune restoration that involves the removal of 30 acres of European beach grass at Fort Funston; restoration of a large tract of second-generation redwood forest at the Phleger Estate; and extensive nonnative plant removal at Rancho Corral de Tierra. The managed retreat from sea level rise at Ocean Beach would improve the integrity of natural habitats and processes. Creek restoration at Stinson Beach (Eastkoot Creek), and especially at Rancho Corral de Tierra would improve vegetation and wildlife habitat by improving habitat structure and the diversity of habitats available to support the needs of various species. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. The impact of

these activities would be long term, moderate, beneficial, and localized.

Visitor access and use would be expanded under alternative 3, potentially resulting in additional impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long-term, minor, adverse, and localized.

New and/or improved recreational development including new visitor facilities and amenities at (1) Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley and along State Route 1 and Conzelman, McCullough, and Bunker Roads in Marin County; at (2) Upper Fort Mason, Fort Miley, China Beach, and Fort Funston in San Francisco County; and at (3) Milagra Ridge, Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo County would have long-term, minor, adverse, localized impacts on vegetation and wildlife due to the permanent loss of plants and wildlife habitat. Short-term, minor, adverse impacts on vegetation would occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts on wildlife, such as disturbance, would occur during construction.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative. Similarly, impacts from vegetation and wildlife management and monitoring activities under alternative 3 would be the same as those described in the no-action alternative. The establishment of a native plant nursery would provide additional capacity to improve native vegetation and wildlife habitat and expand stewardship efforts—a beneficial impact.

At Alcatraz Island, adverse impacts on waterbirds under alternative 3 would be greater than those described in the no-action alternative because new visitor amenities (dorm-like accommodations and a service kitchen) and potential increased access to the island would cause increased disturbance to nesting waterbirds and human-wildlife conflict. However, no known state- or federal-listed threatened or endangered bird species inhabit Alcatraz Island.

The utilization of Pier 4 at Fort Mason as an additional point of embarkation for ferries to the island could result in additional impacts on seabirds caused by the proximity of potential increases in vessel traffic and associated garbage and marine debris. Gulls would be more highly managed in primary visitor use areas, which would take up more of the island under alternative 3, resulting in disturbance and displacement of gulls. Additionally, the level of historic preservation to the island (i.e., Parade Ground, building rehabilitation, and adaptive reuse) would cause habitat loss and disturbance to waterbird populations. Management of the Parade Ground ruins would affect the island's western gull colony more than other species, and could result in major adverse effects to the western gull. However, population viability would be maintained.

As in the no-action alternative, the National Park Service would continue to protect nesting and roosting habitats and initiate habitat enhancements in other areas of the island where possible; these actions would result in beneficial impacts. The National Park Service would also continue to manage the common raven population on Alcatraz Island and would continue monitoring to ensure that nonnative pests such as rats do not become established on the island. Human disturbance may also result in increased nest predation by ravens. The park would continue to manage visitation and park operations to minimize disturbance to nesting birds. The Model Industries Building and New Industries Building, both of which are proximate to sensitive waterbird breeding areas, would be managed in a way that minimizes human-induced disturbance and predation by western gulls and protects the waterbird

breeding colonies on the north end of the island. The marine waters within the vicinity of the colonial nesting birds would be closed to boating during the breeding season, resulting in beneficial impacts. Given the combined effects of disturbance and protective actions, the numbers of breeding pairs of waterbirds on the island could change over time depending on the frequency and intensity of expanded visitor activity, but minimum numbers of nesting pairs would support the maintenance of viable populations. Collectively, these activities would result in long-term, moderate, adverse, localized to regional impacts on waterbirds on Alcatraz Island, and could result in major adverse impacts on western gulls.

However, under alternative 3, the protection of waterbird nesting habitat at Point San Pedro would be enhanced somewhat relative to the no-action alternative. The designation of a natural zone in these areas would help protect waterbird breeding and foraging, and land- and water-based visitor access would be highly managed. The proposed scenic corridor zone around Bird Island would not notably alter the protection of waterbird habitat relative to the no-action alternative. These resource management measures would result in long-term, minor, beneficial, and localized impacts on waterbirds at Bird Island and Point San Pedro.

Conclusion. The development of a sustainable trail system and the elimination of unneeded roads and the restoration of natural vegetation in these areas would result in long-term, minor, beneficial, localized impacts on vegetation and wildlife.

The expansion of visitor access and use and the development of new or improved recreational facilities would result in long-term, minor, adverse, and localized impacts. The construction activities related to these developments would result in short-term, minor, and adverse impacts.

Natural resource restoration would result in long-term, moderate, beneficial, and localized impacts.

Habitat restoration efforts and educational and participatory stewardship programs would result in long-term, minor to moderate, beneficial impacts that would occur both at the local level (habitat restoration) and parkwide (stewardship programs).

Impacts on waterbirds on Alcatraz Island would be long-term, moderate, adverse, and localized to regional, and could result in major adverse impacts on western gulls. However, gull population viability would be maintained. Impacts on waterbird nesting in other coastal areas of the park (Bird Island and Point San Pedro) would be long-term, minor, beneficial, and localized. If it becomes evident that implementation of the actions in alternative 3 at both the Parade Ground and at the north end of Alcatraz Island (in the vicinity of the New Industries / Model Industries buildings) have the potential to have major adverse effects and would result in long-term or permanent loss of waterbird nesting colonies (with the exception of western gulls), the park staff would use adaptive management techniques and take the necessary measures to ensure the continued viability of breeding populations of these species on the island. These steps could include allowing only nonbreeding season access to the Parade Ground or limiting the types and scale of uses in the north end of the island during nesting seasons. These actions would ensure that adverse impacts do not exceed the moderate intensity threshold.

Generally, adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration, ongoing management and monitoring activities, and the introduction of protective park management zones.

Special Status Species (federal and state threatened and endangered species)

No-action Alternative

In general, many of the impacts on vegetation and wildlife previously described in the habitat section would apply to special status species. For example, visitor use and new development would result in changes that would have adverse impacts on listed species and their habitats. Likewise, vegetation management and creek restoration would result in beneficial impacts on listed species and their habitats. Keeping this in mind, the analysis provided below generalizes about the effects of land management priorities and, where possible, focuses on the impacts that specific actions included in the alternatives may have on listed species and their habitats.

Federal Threatened and Endangered Species.

California red-legged frog (Rana aurora draytonii)—

Wetland restoration and management, such as the project completed at Mori Point, would continue to improve habitat for the California red-legged frog—resulting in a beneficial impact. Creek restoration in Marin County would improve wetlands and riparian habitat that could serve as potential future habitat for the frog. Nonnative plant removal, especially in riparian and wetland areas, could also improve the structure and condition of vegetation that supports frogs. All of these activities should improve and protect breeding and foraging habitat by improving conditions for emergent riparian vegetation and other vegetation conditions preferred by the California red-legged frog, such as dense, shrubby riparian areas. Controlling and managing visitor use would reduce impacts on frogs, such as habitat alteration and direct impacts from recreational use and development; however, some adverse impacts would continue. Long-term park operations and short-term project specific construction impacts on the species may occur. These may involve "take" associated with removal and translocation of individuals outside construction areas or impacts of existing roadways/trails and their maintenance. The National Park Service would continue to monitor frog populations and survey potential habitat. The primary threat to the frog would continue to be habitat loss—an adverse impact associated with increased urbanization of the region. There has not been any designated critical habitat in Marin or San Mateo counties managed by Golden Gate National Recreation Area (*Federal Register* 71: 19244–19346). Collectively, impacts on the California red-legged frog resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term. Consultation for specific projects would occur as necessary.

Mission blue butterfly (Icaricia icaroides missionensis)—

Coastal scrub habitat and grassland restoration, including nonnative plant removal and vegetation management, in the Marin Headlands and at Milagra Ridge and Sweeney Ridge in San Mateo County, would continue to improve conditions for lupine plants that support mission blue butterflies. The *Marin Headlands-Fort Baker Plan* being implemented in cooperation with the Federal Highway Administration would cause some adverse impacts and loss of habitat (which is being mitigated) in the vicinity of Conzelman and Bunker roads due to construction; however, it would result in long-term benefits to butterfly habitat. The use of prescribed fire, an action analyzed under the park's fire management plan / environmental impact statement, would also continue to have short-term adverse effects on butterflies and butterfly habitat with long-term beneficial

effects. Conditions at park lands in San Mateo County, such as the widespread presence of nonnative plants, would continue to cause adverse impacts on potential butterfly habitat. Controlling and managing visitor use in known habitat areas throughout the park would reduce impacts on butterflies, such as the trampling of host and nectar plants and direct impacts on larvae and pupae from recreational use and development; however, some adverse impacts would continue. The National Park Service would continue to monitor butterfly populations and survey potential habitat. The primary threat to the butterfly would continue to be habitat loss, resulting in an adverse impact associated with increased urbanization of the region. Collectively, impacts on the mission blue butterfly resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term. Consultation for specific projects would occur as necessary.

Tidewater goby (Eucyclogobius newberryi)—

Because tidewater gobies are currently only found in Rodeo Lagoon within the planning area, impacts would be restricted to this location. NPS management of Rodeo Lagoon is compatible with tidewater goby activities and requirements. Throughout its range, the primary threats to gobies include loss and modification of habitat, water diversions, predatory and competitive introduced fish species, habitat channelization, and degraded water quality. NPS activities, such as vegetation management, wetland enhancement, and efforts to improve water quantity and quality within the watershed near Rodeo Creek, would have beneficial impacts on maintaining appropriate habitat characteristics that support gobies in Rodeo Lagoon. The National Park Service would continue to monitor goby populations and habitat and inventory potential habitat. Collectively, impacts on the tidewater goby resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term. Consultation for specific projects would occur as necessary.

San Francisco garter snake (Thamnophis sirtalis tetrataenia)—

Because San Francisco garter snakes are currently restricted to localities in San Mateo County (the only documented occurrence is at Mori Point / Sharp Park). According to research conducted by Swaim Biological, Inc., in 2006, two other locations within the planning area (Milagra Ridge and Rancho Corral de Tierra) appear to have suitable habitat to support breeding populations of San Francisco garter snakes. In addition, two other sites (Sweeny Ridge and Cattle Hill) can provide connectivity between known snake populations or between high-quality aquatic habitats that potentially support San Francisco garter snakes. Therefore, impacts would be restricted to these locations. Because California red-legged frogs are an important prey item for this species, effects on red-legged frogs are expected to have cascading effects on the snake.

Wetland restoration and management at Mori Point could have short-term adverse impacts on California red-legged frogs and the San Francisco garter snake, but would result in long-term habitat improvements—a beneficial impact. Some types of nonnative tree removal would also improve the structure and condition of habitat that supports snakes. Controlling and managing visitor use would reduce impacts on snakes, such as habitat

alteration and direct impacts from recreational use and development; however, some adverse impacts would continue. The National Park Service would continue to monitor snake populations and survey potential habitat resulting in a beneficial impact. The primary threat to the snake would continue to be habitat loss and alteration—an adverse impact associated with increased urbanization of the region. Collectively, impacts on the San Francisco garter snake resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term. Consultation for specific projects would occur as necessary.

San Bruno elfin butterfly (Callophrys mossii bayensis)—

Because the San Bruno elfin butterfly is currently only known to occur at Milagra Ridge within the planning area, impacts would be restricted to this site. Other suitable habitat may be present at other sites in San Mateo County.

Nonnative plant removal and vegetation management would continue to improve conditions for *Sedum spathulifolium*, the succulent plant that hosts butterfly larvae. Controlling and managing visitor use in known habitat areas would reduce impacts on butterflies, such as the trampling of host plants and direct impacts on larvae and pupae from recreational use and development; however, some adverse impacts would continue. The National Park Service would continue to monitor butterfly populations and survey potential habitat, resulting in a beneficial impact. The primary threat to the butterfly would continue to be habitat loss—an adverse impact associated with increased urbanization of the region. Collectively, impacts on the San Bruno elfin butterfly resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Coho Salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O.* mykiss*)—

These two listed salmonid species are analyzed together because of the similarities in their life characteristics, habitat requirements, and the effects of impacts on the two species.

Coho salmon are restricted to Redwood Creek and Eastkoot Creek in Marin County, estuarine sites such as Bolinas Lagoon, as well as the nearshore waters of the Pacific Ocean. Steelhead trout are restricted to Redwood Creek and the drainages to Bolinas Lagoon and Rodeo Lagoon in Marin County and West Union Creek, a tributary to San Francisquito Creek, in San Mateo County. Therefore, impacts would be restricted to these locations.

National Park Service activities, such as vegetation management, creek restoration, and efforts to improve water quantity and quality within the Redwood Creek watershed would have beneficial impacts on maintaining habitat characteristics that support anadromous fish. Projects in Marin County at the Lower Redwood Creek property (floodplain restoration), Big Lagoon (estuarine and wetland restoration), Stinson Beach (stream and wetland restoration) and Muir Woods National Monument (vegetation management) would have beneficial impacts on habitat parameters required by the two species. These projects would improve riparian vegetation and in-stream habitat complexity, resulting in improvements to spawning, rearing, and migratory habitats. Critical habitat would be affected by restoration activities. Within the immediate project area, short-term, minor, adverse,

localized impacts on nearly all essential features of critical habitat (substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions) would be expected. However, these short-term impacts would be outweighed by the beneficial impacts expected to occur over the long term. The National Park Service would continue to monitor coho and steelhead populations and inventory potential habitat.

Controlling and managing visitor use would reduce impacts on coho and steelhead, such as habitat alteration and direct impacts from recreational use and development; however, some adverse impacts would continue. The primary threats to coho and steelhead would continue to be loss and modification of habitat, water diversions, habitat channelization, sedimentation, and degraded water quality—adverse impacts associated with increased urbanization of the region. Collectively, impacts on coho salmon and steelhead trout resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term. Consultation for specific projects would occur as necessary.

Western snowy plover (Charadrius alexandrines nivosus)—

The western snowy plover nests in coastal Marin County at Point Reyes National Seashore and Dillon Beach. Nonbreeding snowy plovers regularly use habitat within the planning area at Ocean Beach. Snowy plovers are occasionally observed at Rodeo Beach, although these birds tend to remain only for short periods. Therefore, impacts would be restricted to these locations.

Seasonal visitor use restrictions requiring dogs to be on leash on a portion of Ocean Beach would continue to assist in the protection of plovers, resulting in a beneficial impact. However, visitor use (especially dogs off-leash) would continue to disturb foraging or roosting birds resulting in long-term, minor, adverse, localized impacts. The National Park Service would continue to restrict park management activities in plover habitat and provide guidance for beach patrol activities and is currently developing a shorebird plover docent program—all of which assist with plover protection and provide beneficial impacts. The National Park Service would continue to monitor plover populations and survey potential habitat. The primary threat to the plover within the region would continue to be habitat loss—an adverse impact associated with increased urbanization of the region and the loss or alteration of beach habitat. Collectively, impacts on the western snowy plover resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, minor, adverse, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect.*"

Northern spotted owl (Strix occidentalis caurina)—

Suitable habitat for northern spotted owls includes all evergreen forested habitat north of State Route 1 in Marin County. Within the planning area, known spotted owl populations are currently limited to Muir Woods National Monument, Homestead Valley, and the Bolinas Lagoon watershed. Therefore, impacts would be restricted to these locations.

Vegetation management actions designed to protect and enhance coniferous forest, including old-growth, second-growth and remnant stands, would provide potential roosting, feeding, and nesting habitat for the owl, resulting in a beneficial impact. The National Park Service would continue to monitor owl populations and survey potential

habitat. Visitor use in the area would continue to disturb owls. Barred owls would also likely continue to invade preferred northern spotted owl habitats—an adverse impact. Ongoing actions to reduce human-created noise and light at Muir Woods National Monument would result in improvements to habitat conditions. The primary threat to the northern spotted owl in the region would continue to be the loss of habitat—an adverse impact associated with increased urbanization of the region. Other threats include expansion in the range of the barred owl, West Nile virus, changes in habitat due to sudden oak death, and recreational pressure. Locally, in Muir Woods National Monument, the primary threat is from barred owls. Collectively, impacts on the northern spotted owl resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, minor, beneficial and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco Lessingia (Lessingia germanorum)—

Vegetation management, including nonnative plant removal, would continue to improve conditions for the San Francisco *Lessingia*. Restoration projects at Fort Funston (about 20 acres of ice plant removal) in areas that should contain open sandy soils and dunes would reduce competition with nonnative vegetation. Since the *Lessingia* does not currently occur there, these actions at Fort Funston would result in a beneficial impact if a new population of *Lessingia* is reintroduced there, as proposed in the USFWS *Recovery Plan for Coastal Plants of the Northern San Francisco Peninsula*. Controlling and managing visitor use in known habitat areas would reduce impacts on the *Lessingia*, such as the trampling of plants; however, some adverse impacts would continue. The National Park Service would continue to monitor *Lessingia* populations and survey potential habitat, resulting in a beneficial impact. The primary threat to the *Lessingia* would continue to be habitat loss—an adverse impact associated with increased urbanization of the region—and habitat alteration resulting in increases in invasive, nonnative plants. Collectively, impacts on the San Francisco *Lessingia* resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

State Threatened and Endangered Species.

Bank swallow (Riparia riparia)—

The only known nesting site for bank swallows within the park is in the coastal bluffs at Fort Funston. The National Park Service would continue to maintain natural geologic processes that erode the cliffs and provide suitable nesting habitat, resulting in a beneficial impact. Visitor use in the vicinity of the nest sites, as well as the defacing of the sandy cliffs themselves, would continue to disturb individual birds and affect nesting activity and success—an adverse impact. The National Park Service would continue to monitor bank swallow populations and survey potential habitat, resulting in a beneficial impact. The primary threat to the bank swallow would continue to be habitat loss, resulting in an adverse impact associated with increased urbanization, conversion of natural habitats, and channelization of waterways in the region. Collectively, impacts on the bank swallow resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. However, it should be noted that bank stabilization work conducted by the City of San Francisco in the vicinity of the bank swallow colony (both on and off-park lands) could continue under the no-action alternative. If so, it could continue to have notable adverse effects on bank swallow habitat.

TABLE 16. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF GOLDEN GATE NATIONAL RECREATION AREA, NO-ACTION ALTERNATIVE

Species	Status	ESA Determination
California red-legged frog (*Rana aurora draytonii*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
Mission blue butterfly (*Icaricia icaroides missionensis*)	Federal endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
Tidewater goby (*Eucyclogobius newberryi*)	Federal endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	Federal endangered	"may affect, not likely to adversely affect"
Coho salmon, Central California Coast (*Oncorhynchus kisutch*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
Steelhead trout, Central California Coast (*Oncorhynchus mykiss*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and park management over the long term
Western snowy plover (*Charadrius alexandrines nivosus*)	Federal threatened	"may affect, likely to adversely affect"
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	"may affect, not likely to adversely affect"
San Francisco *Lessingia* (*Lessingia germanorum*)	Federal endangered; state endangered	"may affect, not likely to adversely affect"
Bank swallow (*Riparia riparia*)	State threatened	long-term, beneficial, minor, and localized

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Under alternative 1, a variety of management zones would be used that would assist in the protection of special status species. Approximately 77% of the park would be zoned as natural and sensitive resources zones.

Federal Threatened and Endangered Species.

California red-legged frog (Rana aurora draytonii)—

Impacts on California red-legged frogs and their habitat from alternative 1 would be the same as under the no-action alternative with the exception of impacts on habitat from expanded restoration of natural areas. The removal of the dam at Tennessee Pond and other infrastructure, and the restoration of riparian habitat in Lower Tennessee Valley would result in beneficial effects. Also, vegetation management, including nonnative plant removal, especially in riparian and wetland areas in San Mateo County, would be greater than under the no-action alternative, creating improvements to vegetation structure and condition that could improve breeding and foraging habitat, resulting in a beneficial impact. Impacts on the frog from new recreational development under alternative 1 would not occur because any new facilities would be sited to avoid existing or potential frog habitat or conservation measures would be taken in consultation with the appropriate resource agencies. Impacts on the California red-legged frog resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Mission blue butterfly (Icaricia icaroides missionensis)—

Impacts on mission blue butterflies and their habitat from alternative 1 would be the same as the no-action alternative with the exception of vegetation management actions in San Mateo County and new recreational development in San Mateo and Marin counties. Vegetation management, including nonnative plant removal, in San Mateo County park lands would improve conditions that support the host lupine, resulting in a beneficial impact. However, increased visitor use in this area could also cause adverse impacts on host plants and butterfly larvae and pupae. New recreational development in known habitat in Marin and San Mateo counties would slightly increase the adverse impacts that are described under the no-action alternative. Impacts on the mission blue butterfly resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Tidewater goby (Eucyclogobius newberri)—

Impacts on tidewater gobies and their habitat from alternative 1 would be the same as the no-action alternative. Impacts on the tidewater goby resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco garter snake (Thamnophis sirtalis tetrataenia)—

Impacts on the San Francisco garter snake and their habitat under alternative 1 would be the same as under the no-action alternative with the exception of habitat improvements in San Mateo County. Vegetation management, including nonnative plant removal in riparian and wetland areas, would improve the

structure and condition of vegetation that supports snakes, resulting in a beneficial impact. Impacts on the San Francisco garter snake resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect*."

San Bruno elfin butterfly (Callophrys mossii bayensis)—

Impacts on the San Bruno elfin butterfly and their habitat under alternative 1 would be the same as under the no-action alternative, with the exception of habitat improvements at Milagra Ridge and other park lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including earthwork and native plantings covering about 20 acres) could improve conditions for host plant recruitment and butterfly use. Vegetation management, including nonnative plant removal, elsewhere in San Mateo County would improve the structure and condition of vegetation and could increase the potential for local range expansion into additional suitable habitat, resulting in a beneficial impact. Impacts on the San Bruno elfin butterfly resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

Adverse impacts on coho salmon and steelhead trout and their habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 1 but the scale would be greater, resulting in increased beneficial impacts. Restoration activities in the Redwood Creek watershed in Marin County and at various creeks within San Mateo County would improve habitat characteristics that support anadromous fish. The goal of reconnecting creeks to the ocean on San Mateo County park lands, and partnering with Caltrans to improve fish passage, would provide the habitat required to support the life cycle of these anadromous fish, resulting in a beneficial impact. Impacts on coho salmon and steelhead trout resulting from NPS actions that are part of alternative 1 would be long term, beneficial, moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Western snowy plover (Charadrius alexandrines nivosus)—

Impacts on the Western snowy plover and their habitat from alternative 1 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Northern spotted owl (Strix occidentalis caurina)—

Impacts on northern spotted owls and their habitat from alternative 1 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco Lessingia (Lessingia germanorum)—

Adverse impacts on the San Francisco *Lessingia* and its habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 1, but the scale would be greater, resulting in increased beneficial impacts due to expanded vegetation management and native plant habitat restoration. Impacts on the San Francisco *Lessingia* resulting from NPS actions that are part of alternative 1 would be long term,

beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

State Threatened and Endangered Species.

Bank swallow (Riparia riparia)—

Impacts on bank swallows and their habitat from alternative 1 would be the same as the no-action alternative. Impacts from NPS actions would be long term, beneficial, minor, and localized. However, as noted under the no-action alternative, adverse impacts on bank swallow from City of San Francisco bank stabilization work on and off park lands could continue.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Under alternative 2, a variety of management zones would be used that would assist in the protection of special status species. Approximately 92% of the park would be zoned using the natural and sensitive resources zones.

TABLE 17. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF GOLDEN GATE NATIONAL RECREATION AREA, ALTERNATIVE 1

Species	Status	ESA Determination
California red-legged frog (*Rana aurora draytonii*)	Federal threatened	*"may affect, not likely to adversely affect"*
Mission blue butterfly (*Icaricia icaroides missionensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Tidewater goby (*Eucyclogobius newberryi*)	Federal endangered	*"may affect, not likely to adversely affect"*
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Coho salmon, Central California Coast (*Oncorhynchus kisutch*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
Steelhead trout, Central California Coast (*Oncorhynchus mykiss*)	Federal threatened	*"may affect, not likely to adversely affect"*
Western snowy plover (*Charadrius alexandrines nivosus*)	Federal threatened	*"may affect, not likely to adversely affect."*
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	*"may affect, not likely to adversely affect"*
San Francisco *Lessingia* (*Lessingia germanorum*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
Bank swallow (*Riparia riparia*)	State threatened	long-term, beneficial, minor, and localized

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Under alternative 2, a variety of management zones would be used that would assist in the protection of special status species. Approximately 92% of the park would be zoned using the natural and sensitive resources zones.

Federal Threatened and Endangered Species.

California red-legged frog (Rana aurora draytonii)—

Impacts on California red-legged frogs and their habitat from alternative 2 would be the same as the no-action alternative with the exception of impacts on habitat from expanded restoration of natural areas. Vegetation management, including nonnative plant removal, especially in riparian and wetland areas in Marin and San Mateo counties, would be greater than under the no-action alternative, resulting in improvements to vegetation structure and condition that could improve breeding and foraging habitat—a beneficial impact. Impacts on the frog from new recreational development under alternative 2 would not occur because any new facilities would be sited to avoid existing or potential frog habitat. Impacts on the California red-legged frog resulting from NPS actions that are part of the alternative 2 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Mission blue butterfly (Icaricia icaroides missionensis)—

Impacts on mission blue butterflies and their habitat from alternative 2 would be the same as those of the no-action alternative, with the exception of impacts resulting from vegetation management actions and new recreation development in San Mateo County and from park land use in Marin County. Vegetation management, including nonnative plant removal, in San Mateo County park lands would improve conditions that support the host lupine, resulting in a beneficial impact. However, increased visitor use in this area could also cause adverse impacts on host plants and butterfly larvae and pupae. New recreational development in known habitat in San Mateo County would slightly increase the adverse impacts that are described under the no-action alternative. Management zoning of known habitat in Marin County would provide greater protection of butterfly habitat than under the no-action alternative, creating a beneficial impact. Impacts on the mission blue butterfly resulting from NPS actions that are part of alternative 2 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Tidewater goby (Eucyclogobius newberryi)—

Impacts on tidewater gobies and their habitat from alternative 2 would be the same as the no-action alternative, with the exception of greater beneficial impacts resulting from expanded restoration efforts and watershed protection. Impacts on the tidewater goby resulting from NPS actions that are part of alternative 2 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco garter snake (Thamnophis sirtalis tetrataenia)—

Impacts on the San Francisco garter snake and their habitat under alternative 2 would be the same as under the no-action alternative, with the exception of impacts created by habitat improvements in San Mateo County. Vegetation management, including nonnative plant removal in riparian and wetland areas, would improve the structure and condition of

vegetation that supports snakes, resulting in a beneficial impact. Impacts on the San Francisco garter snake resulting from NPS actions that are part of alternative 2 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Bruno elfin butterfly (Callophrys mossii bayensis)—

Impacts on the San Bruno elfin butterfly and their habitat under alternative 2 would be the same as under the no-action alternative, with the exception of habitat improvements at Milagra Ridge and other park lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including earthwork and native plantings covering about 20 acres) could improve conditions for host plant recruitment and butterfly use. Vegetation management, including nonnative plant removal, elsewhere in Sam Mateo County would improve the structure and condition of vegetation and could increase the potential for local range expansion into additional suitable habitat, resulting in a beneficial impact. Impacts on the San Bruno elfin butterfly resulting from NPS actions that are part of alternative 2 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Coho salmon, Central California Coast (*Oncorhynchus kisutch*) and steelhead trout, Central California Coast (O. mykiss)—

Adverse impacts on coho salmon and steelhead trout and their habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 2 but the scale would be greater, resulting in increased beneficial impacts. Restoration activities in the Redwood Creek watershed in Marin County and at various creeks within San Mateo County would improve habitat characteristics that support anadromous fish. The goal of reconnecting creeks to the ocean on San Mateo County park lands, and partnering with Caltrans to improve fish passage, would provide the habitat required to support the life cycle of these anadromous fish, resulting in a beneficial impact. Impacts on coho salmon and steelhead trout resulting from NPS actions that are part of alternative 2 would be long term, beneficial, moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Western snowy plover (Charadrius alexandrines nivosus)—

Impacts on western snowy plover and their habitat from alternative 2 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Northern spotted owl (Strix occidentalis caurina)—

Impacts on northern spotted owls and their habitat from alternative 2 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco Lessingia (Lessingia germanorum)—

Adverse impacts on the San Francisco *Lessingia* and its habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 2 but the scale would be greater, resulting in increased beneficial impacts due to expanded vegetation management and native plant habitat restoration. The removal of nonhistoric buildings at Fort Funston would provide an opportunity to restore dune habitat and create

an area of expansion for the *Lessingia*. Impacts on the San Francisco *Lessingia* resulting from NPS actions that are part of alternative 2 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

State Threatened and Endangered Species.

Bank swallow (Riparia riparia)—

Impacts on bank swallows and their habitat from alternative 1 would be the same as the no-action alternative. Impacts from NPS actions would be long term, beneficial, minor, and localized. However, as noted under the no-action alternative, adverse impacts on bank swallow from City of San Francisco bank stabilization work on and off park lands could continue.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Under alternative 3, a variety of management zones would be used that would assist in the protection of special status species. Approximately 88% of the park would be zoned using the natural and sensitive resources zones.

Federal Threatened and Endangered.

California red-legged frog (Rana aurora draytonii)—

Impacts on California red-legged frogs and their habitat from alternative 3 would be the same as the no-action alternative with the exception of impacts on habitat from expanded restoration of natural areas. Vegetation management, including nonnative plant removal, especially in riparian and wetland areas in San Mateo County, would be greater than under the no-action alternative, creating improvements to vegetation structure and condition that could improve breeding and foraging habitat, resulting in a beneficial impact. Impacts on the frog from new recreational development under alternative 3 would not occur because any new facilities would be sited to avoid existing or potential frog habitat. Impacts on the California red-legged frog resulting from NPS actions that are part of the alternative 3 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Mission blue butterfly (Icaricia icaroides missionensis)—

Impacts on mission blue butterflies and their habitat from alternative 3 would be the same as the no-action alternative with the exception of vegetation management actions and new recreational development in San Mateo County, and park land uses in Marin County. Vegetation management, including nonnative plant removal, in San Mateo County park lands would improve conditions that support the host lupine—a beneficial impact. However, increased visitor use in this area could also cause adverse impacts on host plants and butterfly larvae and pupae. New recreational development in known habitat in Marin and San Mateo counties would slightly increase the adverse impacts that are described under the no-action alternative. Treatments to restore cultural landscapes in known habitat in Marin County could have adverse impacts (i.e., loss or conversion of habitat) on native coastal shrub habitats and grasslands that support lupine and butterflies; however, butterfly habitat protection objectives would be included in any plans to change existing conditions in this area. Impacts on the mission blue butterfly resulting from NPS actions that are part of alternative 3 would be long term, adverse, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

TABLE 18. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF GOLDEN GATE NATIONAL RECREATION AREA, ALTERNATIVE 2

Species	Status	ESA Determination
California red-legged frog (*Rana aurora draytonii*)	Federal threatened	*"may affect, not likely to adversely affect"*
Mission blue butterfly (*Icaricia icaroides missionensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Tidewater goby (*Eucyclogobius newberryi*)	Federal endangered	*"may affect, not likely to adversely affect"*
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	Federal endangered; State endangered	*"may affect, not likely to adversely affect"*
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Coho salmon, Central California Coast (*Oncorhynchus kisutch*)	Federal endangered; State endangered	*"may affect, not likely to adversely affect"*
Steelhead trout, Central California Coast (*Oncorhynchus mykiss*)	Federal threatened	*"may affect, not likely to adversely affect"*
Western snowy plover (*Charadrius alexandrines nivosus*)	Federal threatened	*"may affect, not likely to adversely affect."*
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	*"may affect, not likely to adversely affect"*
San Francisco *Lessingia* (*Lessingia germanorum*)	Federal endangered; State endangered	*"may affect, not likely to adversely affect"*
Bank swallow (*Riparia riparia*)	State threatened	long-term, beneficial, minor, and localized

Tidewater goby (Eucyclogobius newberryi)—

Impacts on tidewater gobies and their habitat from alternative 3 would be the same as the no-action alternative. Impacts on the tidewater goby resulting from NPS actions that are part of alternative 3 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco garter snake (Thamnophis sirtalis tetrataenia)—

Impacts on the San Francisco garter snake and their habitat under alternative 3 would be the same as under the no-action alternative with the exception of habitat improvements in San Mateo County. Vegetation management, including nonnative plant removal in riparian and wetland areas, would improve the structure and condition of vegetation that supports snakes—a beneficial impact. Impacts on the San Francisco garter snake resulting

from NPS actions that are part of alternative 3 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Bruno elfin butterfly (Callophrys mossii bayensis)—

Impacts on the San Bruno elfin butterfly and their habitat under alternative 3 would be the same as under the no-action alternative, with the exception of habitat improvements at Milagra Ridge and other park lands in San Mateo County. Habitat restoration activities at Milagra Ridge (including earthwork and native plantings covering about 20 acres) could improve conditions for host plant recruitment and butterfly use. Vegetation management, including nonnative plant removal, elsewhere in San Mateo County would improve the structure and condition of vegetation and could increase the potential for local range expansion into additional suitable habitat, resulting in a beneficial impact. Impacts on the San Bruno elfin butterfly resulting from NPS actions that are part of alternative 3 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

Adverse impacts on coho salmon and steelhead trout and their habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 3 but the scale would be greater, resulting in increased beneficial impacts. Restoration activities in the Redwood Creek watershed in Marin County and at various creeks within San Mateo County would improve habitat characteristics that support anadromous fish. The goal of reconnecting creeks to the ocean on San Mateo County park lands, and partnering with Caltrans to improve fish passage, would provide the habitat required to support the life cycle of these anadromous fish, resulting in a beneficial impact. Impacts on coho salmon and steelhead trout resulting from NPS actions that are part of alternative 3 would be long term, beneficial, moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Western snowy plover (Charadrius alexandrines nivosus)—

Impacts on western snowy plover and their habitat from alternative 3 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Northern spotted owl (Strix occidentalis caurina)—

Impacts on northern spotted owls and their habitat from alternative 3 would be the same as the no-action alternative. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

San Francisco Lessingia (Lessingia germanorum)—

Adverse impacts on the San Francisco *Lessingia* and its habitat would be the same as those described under the no-action alternative. The types of beneficial impacts described under the no-action alternative would be the same under alternative 3 but the scale would be greater, resulting in increased beneficial impacts due to expanded vegetation management and native plant habitat restoration. Impacts on the San Francisco *Lessingia* resulting from NPS actions that are part of alternative 3 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the

Endangered Species Act would be "*may affect, not likely to adversely affect.*"

State Threatened and Endangered.

Bank swallow (Riparia riparia)—

Impacts on bank swallows and their habitat from alternative 3 would be the same as the no-action alternative. Impacts from NPS actions would be long term, beneficial, minor, and localized. However, as noted under the no-action alternative, adverse impacts on bank swallow from City of San Francisco bank stabilization work on and off park lands could continue.

TABLE 19. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF GOLDEN GATE NATIONAL RECREATION AREA, ALTERNATIVE 3

Species	Status	ESA Determination
California red-legged frog (*Rana aurora draytonii*)	Federal threatened	*"may affect, not likely to adversely affect"*
Mission blue butterfly (*Icaricia icaroides missionensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Tidewater goby (*Eucyclogobius newberryi*)	Federal endangered	*"may affect, not likely to adversely affect"*
San Francisco garter snake (*Thamnophis sirtalis tetrataenia*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	Federal endangered	*"may affect, not likely to adversely affect"*
Coho salmon, Central California Coast (*Oncorhynchus kisutch*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
Steelhead trout, Central California Coast (*Oncorhynchus mykiss*)	Federal threatened	*"may affect, not likely to adversely affect"*
Western snowy plover (*Charadrius alexandrines nivosus*)	Federal threatened	*"may affect, not likely to adversely affect."*
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	*"may affect, not likely to adversely affect"*
San Francisco *Lessingia* (*Lessingia germanorum*)	Federal endangered; state endangered	*"may affect, not likely to adversely affect"*
Bank swallow (*Riparia riparia*)	State threatened	long-term, beneficial, minor, and localized

CULTURAL RESOURCES

Historic Structures, Historic Districts, and Cultural Landscapes

No-action Alternative

Analysis. Under this alternative, the park would continue to manage park lands as outlined in the 1980 General Management Plan. The no-action alternative would result in few changes to contributing features of historic structures, districts, and cultural landscapes within the project area. The park would continue to stabilize, preserve, and rehabilitate historic structures, districts, and cultural landscapes in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, although much of this work would be subject to funding availability.

The park would continue to seek partner opportunities for assisting in this work when possible. Historic buildings would continue to be rehabilitated and reused by the park and park partners for various public and private purposes including administration and operations; staff housing; offices; commercial ventures; historic residence leasing programs; recreation, educational, and interpretive programs. For structures and buildings where neither funding nor a park partner were available for rehabilitating these resources, the park would stabilize and potentially mothball those buildings until such funds became available. This could result in a local, long-term, minor adverse impact on historic structures, which would be vacant and subject to further deterioration and wear over time.

Projects and plans currently underway, which include some preservation treatments for historic structures, districts, and cultural landscapes within the park, such as improvements to the Marin Headlands transportation infrastructure and the *Marin Equestrian Plan Environmental Assessment*, would be implemented. In addition, the park would continue to inventory and assess properties identified as potentially eligible for listing in the National Register of Historic Places and develop subsequent treatment strategies as needed for historic structures, districts, and cultural landscapes. Overall, the impact under the no-action alternative would be long term, negligible to minor, adverse and beneficial to historic structures, districts, and cultural landscapes.

Specific properties within the area of potential effect with the potential to be impacted by implementation of the no-action alternative are discussed below:

Parkwide.

Seacoast Fortifications of San Francisco Bay (Draft)— The park would continue to conduct stabilization and preservation maintenance of the contributing coastal fortifications and their historic settings. Some of these structures would continue to be accessible to visitors, while others would remain secured with minimal stabilization work performed to address deterioration and safety needs. This would result in a long-term, negligible to minor, adverse effect.

Marin County.

Forts Baker, Barry, and Cronkhite— Historic structures and their settings would be preserved or rehabilitated for recreation, education, and other uses, including park operations. Compatible adaptive reuse of historic structures would continue to be implemented by the park and park partners to preserve buildings and their settings while offering programs that further the park's mission. Planned road, trail, and transit projects would be implemented to improve visitor access and facilitate building reuse. This would result in a long-term, negligible to minor, beneficial and adverse impact on contributing structures and landscapes of this historic district.

Point Bonita Historic District— The lighthouse and its contributing structures and landscape

setting would continue to be preserved and open to visitors. Ongoing stabilization and preservation work would continue and have a long-term, negligible, beneficial and a long-term minor, adverse impact on the district.

Sara Seaver Randall House— Would continue to be managed by Point Reyes National Seashore. No actions would be taken that would have an impact on the site.

Hill 640 Military Reservation— The World War II fire control stations and associated historic landscape would be monitored and active preservation steps would be taken if there are signs of deterioration. This would result in a negligible impact.

Ranch M (Golden Gate Dairy)— The historic ranch buildings and landscape would continue to support an equestrian operation; facilities would be preserved and rehabilitated. This would result in a long-term, minor to moderate, beneficial impact and a long-term minor, adverse impact to the historic structures and landscape features of the former ranch.

Ranch A/B (Miwok)— The historic ranch would continue to house an equestrian operation. Historic structures and landscape features that contribute to the property's integrity would be preserved and rehabilitated in accordance with the recommendations in the *Marin Equestrian Plan*. This would result in a long-term, minor to moderate, beneficial impact and a long-term, minor, adverse impact.

Bolinas Copper Mine— Would continue to be managed by Point Reyes National Seashore. No actions would be taken under the no-action alternative that would have an impact on the site.

Miwok Trail— Cultural landscape resources associated with the Miwok Trail would be preserved and protected; this would have a long-term, negligible, beneficial impact and a long-term, minor, adverse impact.

San Francisco County.

Alcatraz Island National Historic Landmark— The marine environment, weather, and lack of significant capital investment dollars has resulted in some deterioration and loss of historic fabric of the island's historic buildings and landscape features over time. Under this alternative, historic resources that contribute to the national historic landmark status would continue to be stabilized and preserved and improvements incrementally implemented as opportunities and funding arise. The potential lack of investment in some of the historic structures in a timely manner to arrest further deterioration could result in an adverse impact on these resources. In addition, deterioration of buildings and landscapes would continue to limit visitor access.

The arrival area would remain much the same as it is today. Portions of Building 64 would be used for administrative functions. The lighthouse would continue to be preserved for its historic function. The Main Prison Building and adjacent areas would continue to be managed as part of visitor experience while several areas, such as the Citadel, would remain closed to the public. Adjacent landscapes to the Main Prison area would continue to be minimally preserved while providing habitat for seabirds. The National Park Service would continue to employ sustainable infrastructure technologies, whenever possible, to reduce the island's energy and operating needs, which could result in some minor, adverse effects on historic buildings and the landscape. Past studies of the island's historic buildings and features, including the recently completed cultural landscape report (CLR) for Alcatraz Island, would guide stabilization and preservation activities. Implementation of the CLR preservation treatments would have widespread minor to moderate beneficial impacts.

Overall, these changes could diminish the overall integrity of some of the contributing resources to the national historic landmark,

but would not result in a loss of national historic landmark eligibility for the island. Taken together, beneficial effects such as ongoing preservation and implementation of the CLR treatment recommendations with other work would render long-term, minor to moderate, beneficial and adverse impacts on Alcatraz Island.

San Francisco Port of Embarkation National Historic Landmark— The National Park Service would continue to use Building 201 as park headquarters. Lower Fort Mason would continue to be managed by the Fort Mason Foundation, which would perform ongoing preservation and rehabilitation work on the contributing resources, informed by the cultural landscape report for Fort Mason Center. The impact would be long term, minor, beneficial and adverse. Potential future water shuttle access may be provided at one of the piers, but the effects of that proposal as well as the proposed F-Line rail extension, would be addressed in a separate environmental analysis. The anticipated impacts from these respective actions are long term, minor to moderate, and adverse (water shuttle) and long term, moderate, and adverse (F-Line).

Fort Mason Historic District— Many of the historic structures would continue to be preserved and rehabilitated for use by park operations as well as a variety of park partners. Uses would include office, maintenance functions, community garden, a hostel, and residences. The cultural landscape would be preserved and rehabilitated over time. This would result in a long-term, minor, beneficial and adverse impact.

Fort Miley Military Reservation— Historic structures and landscape features would continue to be maintained and preserved. Park maintenance would continue to use some of the historic structures. No major improvements would be made to either the facilities or landscape. This would result in a long-term, minor, adverse impact.

Camera Obscura— Operations and maintenance under this alternative would result in minor, beneficial, and minor, adverse impacts.

Six-inch Gun No. 9— Operations and maintenance under this alternative would result in minor, beneficial, and minor, adverse impacts.

San Francisco Veterans Affairs Medical Center— Continued operation of the park maintenance facility, picnic areas, and other visitor areas at adjacent Fort Miley would have negligible impacts on the Veterans Medical Center Historic District, which is owned and managed by the Department of Veterans Affairs.

China Beach— This area would be preserved for ongoing recreational use and enjoyment. Historic features would be preserved resulting in a long-term, negligible, beneficial, and minor, adverse impact.

Marine Exchange Lookout Station (Octagon House)— This structure would remain unoccupied and would be stabilized rather than rehabilitated; no landscape rehabilitation would be undertaken, resulting in a local, long-term, minor, adverse impact.

O'Shaughnessy Seawall— The historic seawall and promenade on Ocean Beach would be preserved and the area would continue to provide a long trail connection between Fort Funston and the Cliff House. The seawall's preservation and maintenance would result in a long-term, negligible, beneficial, and long-term minor, adverse impact.

San Mateo County.

Point Montara Light Station— The site would continue to be managed for use by a hostel and would include ongoing preservation and maintenance work to the contributing buildings and landscape features to support this use. This would have a long term, minor, beneficial and adverse impact to the district.

Rancho Corral de Tierra— Limited public access for recreational uses would continue in this area. Any trail or site improvements for these uses would be designed in a manner so as to be compatible with, and protect and preserve any contributing historic resources. This would have a long term, minor, adverse impact.

San Francisco Bay Discovery Site National Historic Landmark— The site would continue to be protected and preserved by the National Park Service, resulting in a long-term, negligible, beneficial impact.

Shelldance Nursery— This area would be managed for park trail access and would accommodate some park operations functions as well as a commercial nursery. Reuse plans for this area would continue to preserve and protect potential contributing historic structures and landscape features and would result in long-term, minor, beneficial and adverse impacts.

Conclusion. When combined with the effects of the actions that are common to all alternatives, the impact to historic structures, districts, and cultural landscapes under the no-action alternative would be long-term, negligible to minor, adverse and beneficial. Overall, the impacts on historic buildings, structures, and landscape features on Alcatraz Island under this alternative would be long term, minor to moderate, beneficial and adverse.

Under the no-action alternative, the section 106 determination of effect on historic buildings, structures, districts, and cultural landscapes in Golden Gate National Recreation Area, excluding Alcatraz Island National Historic Landmark, would be *adverse effect*. On Alcatraz Island, the section 106 determination of effect on historic buildings, structures and cultural landscapes would be *adverse effect*.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Marin, San Francisco, and San Mateo counties)

Analysis. Actions under alternative 1 would focus on maximizing opportunities for adaptive reuse and rehabilitation of historic structures, districts and cultural landscapes in a manner that would support overall park visitor enjoyment, understanding and community connections. One of the goals of this alternative would be to preserve and protect cultural resources while allowing visitors to connect with and better understand and appreciate these resources and their histories.

Under alternative 1, the park would rehabilitate existing facilities to improve their condition to better welcome and support park visitors than exist today. Park partners would continue to play an important role in preserving historic resources through adaptive reuse of buildings and structures throughout the park to provide programs and services to visitors in support of the park's mission. Any historic building and landscape rehabilitation would be in accordance with *The Secretary's Standards for Historic Rehabilitation*. In some cases, building rehabilitation may also include construction of a compatible addition to accommodate a new use. Historic structures reports and cultural landscape reports would be prepared, as needed, in advance of preservation and rehabilitation project implementation.

Improved orientation and information services would be a key component of this alternative, which could require the introduction of new site furnishings and features in the park's landscape. In addition, some new visitor amenities (restrooms, parking lots, trailheads, etc.) and facilities would be constructed to enhance the overall visitor experience as well as day to day park operations (particularly in Marin and San Mateo counties). For any new development

within a historic district or cultural landscape setting, an appropriate level of historic research, resource inventory and assessment would be conducted in advance of design. In addition, design guidelines for a specific area would be prepared in advance when necessary to assure compatibility of any new planning, design, and construction within the historic setting. The park's cultural resources staff would continue to conduct historic resource surveys, research, and determinations of eligibility for historic structures, districts, and landscapes that may be eligible for listing in the National Register of Historic Places. This information would help guide informed decision making in the future regarding how historic structures, districts, and landscapes and their contributing features should be managed. Careful design would ensure that the rehabilitation of historic buildings, structures and landscapes, the development of new facilities such as parking areas, and the expansion or development of trails would minimally affect the scale and visual relationships among significant landscape features. In addition, the topography, vegetation, circulation features, and land use patterns of any significant cultural landscape would remain largely unaltered.

Specific properties within the area of potential effect with the potential to be impacted by implementation of the alternative 1 are discussed below:

Parkwide.

Seacoast Fortifications of San Francisco Bay (Draft)— Under this alternative, the park would pursue an ongoing program of stabilization, preservation, and interpretation of the seacoast fortifications that contribute to the NHL-eligible district. A preservation strategy for the park's seacoast fortifications would be prepared to guide the long-term treatment and management of these resources given that each fortification is in a varying state of repair and provides different interpretive opportunities. As an example, restoration may be the preferred preservation treatment in some instances such as at Battery Townsley. Battery Mendell and the Bird Rock Overlook area in the Marin Headlands would be rehabilitated and interpreted for visitor use. In addition to the stabilization and preservation of fortifications in Marin, those contributing historic seacoast fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San Mateo County would also be preserved and interpreted. Overall, these preservation treatments for the historic fortifications and their landscaped settings would have long-term, minor to moderate, beneficial and minor adverse impacts.

Marin County.

Forts Baker, Barry, and Cronkhite— Under this alternative, no actions are proposed for Fort Baker. However, actions are contemplated for Forts Barry and Cronkhite. Within the historic district, alternative 1 includes the following actions that could affect the cultural landscape of the district: comprehensive sets of improvements to trails, overlooks, visitor amenities; the rehabilitation and introduction of transit and orientation facilities; broad programs of natural resource enhancements; the introduction of new and expanded programs; associated facilities for activities such as camping and picnicking. Some of these actions would enhance the historic setting while introducing compatible new elements into the landscape, while others would be noticeable changes that could potentially alter a character-defining feature of the landscape. Therefore, these actions would result in both long-term, minor to moderate, adverse impacts and minor to moderate beneficial impacts.

Actions that would affect historic structures, as well as the surrounding historic landscape, include the removal of some Capehart housing units whose historic significance and integrity needs to be assessed; some new construction at different locations for residential use, visitor facilities, overnight accommodations, and operational needs; adaptive reuse of historic structures; and

preservation of coastal fortifications. These would result in both long-term, minor to moderate, adverse and beneficial impacts. Modifications to historic structures and landscape features would follow *The Secretary of the Interior's Standards for the Treatment of Historic Properties* so as to minimize adverse impacts on the historic resources.

Overall, these modifications would be noticeable and would result in a visual change to the district and to the individual landscape areas within the district. Although they would result in an adverse effect on individual contributing resources, taken together they would not result in an adverse effect on the integrity of the national register district. Under this alternative, with the incorporation of mitigation measures including the preparation of cultural landscape reports, historic structure reports, and design guidelines to ensure compatible new construction as described in part 8 of this document, the long-term impact would be minor to moderate, adverse and beneficial.

Point Bonita Historic District— Historic buildings and landscape features in the Point Bonita Historic District would continue to be preserved and interpreted, resulting in long-term, minor, beneficial and adverse impacts.

Sara Seaver Randall House— Would continue to be managed by Point Reyes National Seashore. No actions would be taken that would have an impact on the site.

Hill 640 Military Reservation— Under this alternative, the historic structures and cultural landscape features associated with the historic coastal defense fortifications at Hill 640 Military Reservation would continue to be stabilized and preserved. This would result in a long-term, negligible, beneficial, and long-term, minor, adverse impact.

Ranch M (Golden Gate Dairy)— Similar to the no-action alternative, in alternative 1 the area would be managed to retain the pastoral character of the area while historic buildings and landscape features that contribute to the ranch's national register eligibility at the Golden Gate Dairy would be rehabilitated and adaptively used for equestrian use. Other site improvements would include a small trailhead and public transit stop. Taken together, these improvements would result in a long-term, minor to moderate, beneficial impact, and a long-term, minor, adverse impact due to the addition of new features and other modifications.

Ranch A/B (Miwok)— Similar to the no-action alternative, in this alternative historic buildings and landscape features that contribute to the former ranch's national register eligibility would be rehabilitated and adaptively used for equestrian use. This would result in a long-term, minor to moderate, beneficial, and long-term, minor, adverse impact. Site improvements (such as restrooms, improved parking, and visitor orientation/information) at the nearby Tennessee Valley trailhead parking area would have an indirect, local, long-term, negligible, adverse impact on the district.

Bolinas Copper Mine— Would continue to be managed by Point Reyes National Seashore. No actions would be taken under alternative 1 that would have an impact on the site.

Miwok Trail— Cultural landscape resources associated with the Miwok Trail would be preserved and protected, which would have a long-term, negligible, beneficial, and long-term, minor, adverse impact.

San Francisco County.

Alcatraz Island National Historic Landmark— Under this alternative, the park's management emphasis would improve the overall condition of historic buildings, structures, and landscapes across the island through preservation and rehabilitation and thus provide a greater variety of settings for visitor experience. As a result, visitors would have access to the majority of the islands historic resources and landscapes, and many of the currently closed indoor and outdoor spaces

would be reopened to the public. All of the primary buildings that contribute to Alcatraz Island's landmark status would be rehabilitated in accordance with *The Secretary of the Interior's Standards for Rehabilitation*, and other contributing structures would be stabilized and preserved. This would result in a long-term, moderate, beneficial, and long-term, minor, adverse impact to historic structures.

Specific actions would include rehabilitation of Building 64 as a multipurpose facility for visitor services that could include overnight accommodations, and interpretive and administrative space. The Main Prison Area would be preserved to interpret the federal penitentiary period. The New Industries Building would be rehabilitated and adaptively used as multipurpose facility to host a variety of visitor services. The Guardhouse would be restored to the Civil War-era through removal of the boathouse from a later time period (resulting in a localized, long-term, moderate adverse effect) and the remaining walls and foundations of the Post Exchange and Warden's House would be stabilized. The Power Plant and Quartermaster Warehouse, as well as a portion of the Model Industries Building, would be rehabilitated and adaptively used for maintenance, storage, public safety functions, and potentially to showcase alternative energy technologies. The lighthouse and surrounding area would be preserved, providing for improved visitor access and interpretation. Other historic buildings would be stabilized or rehabilitated all resulting in long term, minor to moderate, beneficial, and long-term, minor, adverse impacts.

Important landscaped areas that contribute to the national historic landmark's integrity, such as around the Main Prison Building and the Parade Ground, would be rehabilitated and characteristic prison-era security features restored. Improvements would be in accordance with the treatment recommendations of the *Cultural Landscape Report for Alcatraz Island* and would comply with *The Secretary of the Interior's Standards for the Treatment of Historic Properties, with Guidelines for the Treatment of Cultural Landscapes*. This would have a beneficial impact on the landscape. There could also be local, minor, adverse impacts on individual cultural landscape features through either their deterioration or loss during the course of rehabilitation to accommodate visitor uses or through the decision to allow some areas to revert to a more natural state. Overall, these landscape changes would result in long-term, minor to moderate, beneficial, and long-term, minor, adverse impacts.

Historic buildings and landscapes on Alcatraz Island could be adversely impacted over time from the effects of increased visitation to the island, especially with the provision of overnight visitor stays. Unstaffed or minimally staffed structures could be more susceptible to vandalism. This would result in a long-term, negligible to minor, adverse impact on historic structures and landscapes. However, the park would monitor the effects of increased visitation on historic resources and could modify visitor access and uses, or would use other techniques to further protect these resources from human impacts without hindering interpretation opportunities and overall visitor experience. In addition, the park's provision of regular patrols and visitor education programs about resource significance and protection (such as discouraging vandalism) would help to reduce these potential visitor impacts on no more than minor.

In conclusion, modifications to the contributing resources on Alcatraz Island would be noticeable. Although some actions could result in an adverse effect on some individual features, taken together they would not result in an adverse effect on the overall integrity of the national historic landmark. The impact to these historic resources under this alternative would be long term, minor to moderate, beneficial and long term, minor to moderate (for removal of the Boathouse) adverse.

San Francisco Port of Embarkation National Historic Landmark— Similar to the no-action alternative, actions under alternative 1 would include the park's continued use of Building 201 as the park headquarters. Lower Fort Mason would continue to be managed by the Fort Mason Foundation who would perform ongoing preservation and rehabilitation work on the contributing resources as recommended in the "Cultural Landscape Report for Lower Fort Mason." These treatments, including energy-saving infrastructure additions, would be designed to avoid adverse effect. The impact would be long term, negligible, beneficial, and long term, minor, adverse. Potential future water shuttle access may be provided at one of the piers, but the effects of that proposal as well as the proposed F-Line rail extension, would be addressed in a separate environmental planning process. The anticipated impacts from these respective actions are long term, minor to moderate, adverse (water shuttle), and long term, moderate, adverse (F-Line).

Aquatic Park Historic District National Historic Landmark— Under alternative 1, site and circulation modifications to accommodate transit improvements on the Van Ness Avenue corridor, and overall wayfinding and park orientation signage, could have direct and indirect effects on the historic landscape of the district. Efforts would be made to minimize the effects on this historic landscape. Recommendations of a cultural landscape report would guide these changes. The potential impact would be long term, minor, and adverse. This property is within and managed by San Francisco Maritime National Historical Park.

Fort Mason Historic District— The Fort Mason District would serve as a "portal to the park" using historic structures to welcome visitors in a setting that would remain a peaceful contrast to the adjacent city. This would be accomplished through the continued rehabilitation of historic buildings and the district's historic designed landscape. The actions to stabilize Pier 4 would provide a long-term, beneficial impact to that resource. Building uses would include visitor services (park orientation, information), food service, special event venues, residences, overnight accommodations, and park/partner offices and programs. Landscape improvements would be consistent with the treatment recommendations based on the "Cultural Landscape report for Fort Mason" (2011) and would include rehabilitation of the overgrown gardens on the east and northeast slopes; the installation of identification, orientation, and wayfinding signs; opening up of important viewsheds; and considerable treatment of over-mature and (sometimes) hazardous trees. This action, along with other contemplated transit access improvements, would trigger the need for visitor circulation and associated site improvements within the district. Some actions may adversely impact individual features: the removal of trees and the time it takes for replacement trees to grow would result in short-term, minor, adverse impacts. However, taken as a whole, with the incorporation of mitigation measures such as the provision for the preparation of historic structure reports and design guidelines, these actions would have a long-term, negligible to moderate, beneficial, and long-term, minor, adverse impacts on the historic district.

Fort Miley Military Reservation— The historic structures of West Fort Miley would continue to be preserved and the landscape enhanced to provide better connections for visitors to adjacent resources and sites. Landscape changes would include the provision of picnicking and group camping facilities, which would be new features in the landscape. These changes would be designed to be compatible with the historic setting. Park maintenance functions would continue to occur in the East Fort Miley historic warehouse and batteries. These actions would result in a long-term, minor, adverse impact.

Pumping Station 2, SF Fire Department Auxiliary Water Supply System— No impacts on this property are anticipated from alternative 1. This property is within Fort

Mason but is owned and operated by the City of San Francisco.

Camera Obscura— Operations and maintenance under this alternative would result in minor, beneficial, and minor, adverse impacts.

Six-inch Gun No. 9— Operations and maintenance under this alternative would result in minor, beneficial, and minor, adverse impacts.

San Francisco Veterans Affairs Medical Center— Continued operation of Fort Miley as a historic site (West) and park maintenance facility (East) would have negligible impacts on the adjacent Veterans Medical Center Historic District, which is owned and managed by the Department of Veterans Affairs.

China Beach— Some improvements to the existing array of visitor facilities and access would be made to support continued use of this popular site. Impacts would be long term, negligible, beneficial, and long term, minor, adverse.

Marine Exchange Lookout Station (Octagon House)— The building and adjacent landscape would be rehabilitated for park or park partner uses and interpreted, which would have a long-term, moderate, beneficial, and long-term, minor, adverse impact.

O'Shaughnessy Seawall— The historic seawall on Ocean Beach would be preserved and protected. Adjacent amenities, such as the promenade, parking area, and restroom facilities that support visitor beach use of the area, would be improved. This would have long-term, negligible to minor, beneficial, and long-term, minor, adverse impacts.

Sutro District— Managed under an existing plan, no impacts on this property are anticipated from alternative 1. This district is managed by the park as a cultural resource but has been determined to not be eligible for the National Register of Historic Places in consultation with the California state historic preservation officer.

San Mateo County.

San Francisco Bay Discovery Site National Historic Landmark— The site and its associated features would be preserved, enhanced, and interpreted. A hikers hut could be constructed in the vicinity as part of a system of trail amenities for the Bay Area Ridge Trail. Any new construction and development would be sited and designed away from the actual site so as not to directly affect the historic integrity of this site. Limited vehicular access to the discovery site would be permitted as well. This could result in increased visitation to the site, which would be monitored over time for any changes to the historic setting, landscape, and monuments to ensure long term preservation. Overall, these changes would result in a long-term, minor, adverse impact.

Point Montara Light Station— The Montara Lighthouse and associated historic buildings and landscape, would continue to function as a hostel and support day-use programs. The facilities would be preserved or rehabilitated as needed and the site interpreted. This would result in long-term, minor, beneficial and adverse impacts.

Rancho Corral de Tierra— If determined eligible for listing in the National Register of Historic Places, contributing historic structures and cultural landscape resources associated with the rural agricultural landscape at Rancho Corral de Tierra in San Mateo County would be preserved in balance with natural resource restoration goals. New visitor amenities, including trailheads and trails, would be compatibly designed to blend in with the historic landscape. The preservation of these resources would have a long-term, minor beneficial impact; however, the introduction of new elements and natural resource restoration activities could result in long-term, minor, adverse impacts.

Shelldance Nursery— If determined eligible for listing in the National Register of Historic Places, transition from a commercial nursery to an area that provides a variety of visitor services and park operational needs would have a moderate, beneficial, and minor, adverse impact, if carried out according to *The Secretary of the Interior's Standards for Historic Preservation* and if removal of any structures that may be deemed historic is avoided.

Conclusion. In conjunction with the effects from the actions common to all alternatives, alternative 1 would result in local, long-term, negligible to moderate, adverse and beneficial impacts on historic structures, districts and landscapes. Impacts would be minimized by implementing mitigation measures. The park's management strategy for historic buildings, districts, and cultural landscapes would generally be one of preservation and rehabilitation for new and continued uses. This would have a long term, beneficial, effect on these resources. In some instances, individual projects could result in adverse effects due to the level or amount of intervention and proposed modifications to a structure or site.

With regards to Alcatraz Island National Historic Landmark, although some actions could result in an adverse effect on some individual features, taken together the actions would not result in an adverse effect on the overall integrity of the national historic landmark. The impacts on historic structures and the cultural landscape would be long term, minor to moderate, beneficial, and long term, minor, adverse.

Under alternative 1, the section 106 determination of effect on historic buildings, structures, districts and cultural landscapes in Golden Gate National Recreation Area, excluding Alcatraz Island National Historic Landmark, would be *adverse effect*. On Alcatraz Island, the section 106 determination of effect on historic buildings, structures and cultural landscapes would be *adverse effect*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Actions under alternative 2 would be similar to those under alternative 1 and would maximize opportunities for adaptive reuse and rehabilitation of historic structures, districts and cultural landscapes in a manner that would support the overall park mission. One of the goals of this alternative would be to preserve and protect cultural resources with support for their stewardship and interpretation.

Under alternative 2, the park would rehabilitate existing facilities to improve their condition to welcome and support park visitors. A focus of programs would be the preservation and enhancement of the park's interconnected coastal ecosystems in which marine resources are valued and featured in interpretation. Cultural resource sites and stories would emphasize human occupation of the coastal environment as reflected in lighthouses, coastal defense structures and other developed sites, and reflected in the area's European exploration, maritime history, as well as historic agricultural land uses.

Park partners would continue to play an important role in preserving historic resources through adaptive reuse of buildings and structures throughout the park to provide programs and services to visitors in support of the park's mission. Consistent with alternative 1, any historic building and landscape rehabilitation would be in accordance with *The Secretary's Standards for Historic Rehabilitation*. In some cases, building rehabilitation may also include construction of a compatible addition to accommodate a new use. Historic structures reports and cultural landscape reports would be prepared, as needed, in advance of preservation and rehabilitation project implementation.

Improved orientation and information services would be a key component of this

alternative, which could require the introduction of new site furnishings and features in the park's landscape. In addition, some new visitor amenities (restrooms, parking lots, trailheads, etc.) and facilities would be constructed to enhance the overall visitor experience as well as day to day park operations (particularly in Marin and San Mateo counties). For any new development within a historic district or cultural landscape setting, an appropriate level of historic research, resource inventory and assessment would be conducted in advance of design. In addition, design guidelines for a specific area would be prepared when necessary in advance to assure compatibility of any new planning, design and construction within the historic setting. The park's cultural resources staff would continue to conduct historic resource surveys, research, and determinations of eligibility for historic structures, districts, and landscapes that may be eligible for listing in the National Register of Historic Places. This information would help to guide informed decision making in the future regarding how historic structures, districts, and landscapes, and their contributing features should be managed. Careful design would ensure that the rehabilitation of historic buildings, structures, and landscapes, the development of new facilities such as parking areas, and the expansion or development of trails would minimally affect the scale and visual relationships among significant landscape features. In addition, the topography, vegetation, circulation features, and land use patterns of any significant cultural landscape would remain largely unaltered.

Specific properties that could be affected by actions proposed under alternative 2 are further described below.

Parkwide.

Seacoast Fortifications of SF Bay (Draft)— Similar to alternative 1, under this alternative the park would pursue an ongoing program of stabilization, preservation, and interpretation of the seacoast fortifications that contribute to the NHL-eligible district. A preservation strategy for the park's seacoast fortifications would be prepared to guide the long-term treatment and management of these resources, given that each fortification is in a varying state of repair and provides different interpretive opportunities. Based on their condition, significance, and suitability for visitor access, interpretive and educational opportunities, or park operational use, historic seacoast fortifications in the Marin Headlands would be stabilized and in some cases rehabilitated. In addition to the stabilization and preservation of fortifications in Marin, those contributing historic seacoast fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San Mateo County would be also be preserved and interpreted. Cultural landscape resources associated with historic coastal fortifications would be preserved and managed in balance with natural resource restoration goals to perpetuate their historic values. Overall, these preservation treatments for the historic fortifications and their landscaped settings would have long-term, minor to moderate, beneficial, and long-term, minor, adverse impacts.

Marin County.

Forts Baker, Barry, and Cronkhite— Within this historic district, alternative 2 includes actions similar to those proposed under alternative 1. Historic buildings and landscapes at Forts Barry and Cronkhite in the Marin Headlands would be rehabilitated and continue to be adaptively used by the park and park partners for recreational, educational, and stewardship activities, resulting in long-term beneficial impacts. Specific actions that could affect the cultural landscape of the district include: compre-+hensive sets of improvements to trails, overlooks, visitor amenities; the rehabilitation and introduction of transit and orientation facilities; broad programs of natural resource enhancements including habitat restoration that would be consistent with the preservation of the historic landscape; the introduction of new and

expanded programs; associated facilities for activities such as camping and picnicking. Some of these actions would enhance the historic setting while introducing compatible new elements into the landscape, while others would be noticeable changes that could potentially alter a character-defining feature of the landscape. Therefore, these actions would result in both long-term, minor to moderate, adverse impacts and long-term, minor to moderate, beneficial impacts.

Actions that could affect historic structures, as well as the surrounding historic landscape, include the removal of the Capehart housing—which needs an assessment of historic significance and integrity—and some potential new construction for a park operations facility in the area; adaptive reuse of historic structures and the ongoing preservation of coastal fortifications. These actions would result in both long-term, minor to moderate, adverse, and long-term, minor to moderate, beneficial impacts. Modifications to historic structures and landscape features would follow *The Secretary of the Interior's Standards for the Treatment of Historic Properties* so as to minimize adverse impacts on the historic resources.

Overall, these modifications would be noticeable and would result in a visual change to the district and to the individual landscape areas within the district. Although they would result in an adverse effect on individual contributing resources, taken together they would not result in an adverse effect on the integrity of the national register district. Under alternative 2, with the incorporation of mitigation measures including the preparation of cultural landscape reports, historic structures reports, and design guidelines to ensure compatible new construction as described in part 8 of this document, the long-term impact would be minor to moderate, adverse, and beneficial.

Point Bonita Historic District— Management of this area would be the same as alternative 1 in which historic buildings and landscape features in the district would continue to be preserved and interpreted, resulting in long-term, minor, beneficial, and long-term, minor, adverse impacts.

Sara Seaver Randall House— Management would continue to be by Point Reyes National Seashore. No actions would be taken under alternative 2 that would have an impact on the site.

Hill 640 Military Reservation— Treatment of this area would be the same as in alternative 1. Historic structures and cultural landscape features associated with the historic coastal defense fortifications would continue to be stabilized, preserved, and interpreted, resulting in a long term, negligible, beneficial, and long-term, minor, adverse impact.

Ranch M (Golden Gate Dairy)— Similar to the no-action alternative, this area would be managed to retain the pastoral character of the area while historic buildings and landscape features that contribute to the ranch's national register eligibility would be rehabilitated and adaptively used for equestrian use. Under alternative 2, nonhistoric residences near the Golden Gate Dairy could be removed if they are not needed to support community services or park operations. Taken together, these improvements would result in a long term, minor to moderate, beneficial and long-term, minor, adverse impact.

Ranch A/B (Miwok)— Similar to the no-action alternative, historic buildings and landscape features that contribute to the former ranch's national register eligibility would be rehabilitated and adaptively used for equestrian use. This would result in a long-term, minor to moderate, beneficial, and long-term, minor, adverse impact. A minimal level of visitor facilities and an improved trailhead to support visitor access to the area's extensive network of trails would be provided at the nearby Tennessee Valley trailhead parking. This would have an indirect, local, long-term, negligible, adverse impact on the district.

Bolinas Copper Mine— Would continue to be managed by Point Reyes National Seashore. No actions would be taken under alternative 2 that would have an impact on the site.

Miwok Trail—- Cultural landscape resources associated with the Miwok Trail would be preserved and protected, which would have a long-term, negligible, beneficial, and long-term, minor, adverse impact.

San Francisco County.

Alcatraz Island National Historic Landmark— Under alternative 2, many of the island's historic buildings and landscape features would only be stabilized while others would be rehabilitated and maintained (resulting in long-term, beneficial impacts because their deterioration would be halted). The island's changing natural and built landscape would continue to evolve, further enhancing habitat for nesting birds. Only those buildings and features necessary to maintain the islands landmark status would be preserved, while natural elements would reclaim other features.

Building 64 would be rehabilitated and adaptively used to support science, education, and stewardship programs, administrative functions, and potential overnight accommodations for program participants. The Main Prison Building, including the hospital wing, adjacent landscape, and the Recreation Yard, would be rehabilitated or potentially restored to reflect historically accurate conditions. The lighthouse and surrounding landscape area would be preserved and interpreted. These rehabilitation efforts would result in a long-term, moderate, beneficial, and long-term, minor, adverse impact.

The Parade Ground would be allowed to be become a "wild" landscape, and its ruins retained to serve as bird habitat. The New Industries Building and the Model Industries Building would be stabilized and no efforts would be made to avoid their loss to coastal erosion. In order to restore natural habitats on the island, some cultural landscape resources would be allowed to deteriorate or be removed, depending on their condition. This would only occur after the features had been documented and recorded in accordance with HABS/HAER/HALS standards. This would result in a long-term, moderate to major, adverse effect on these structures and landscape resources. With the incorporation of mitigation measures, the effect could be reduced to moderate adverse. The interior spaces of the Quartermaster Warehouse and Power Plant would be used for park operations. The Post Exchange would be stabilized to preserve the exterior of the structure; an interior shell could be constructed within the structure for park operations. These building treatments would result in long-term, minor to moderate, beneficial, and long-term, minor, adverse impacts on these resources.

The long-term impacts on particular historic structures, buildings, and landscapes on Alcatraz Island would include minor, moderate, and major, adverse impacts, as well as minor to moderate, beneficial impacts. Overall, these modifications would be noticeable and would result in a visual change to the district and to the individual landscape areas within the district. Although they would result in adverse impacts on individual contributing resources, taken together they would not result in a major adverse impact on the landmark district, as it would continue to maintain its status as a national register landmark district.

Fort Point— Operations and maintenance under this alternative would result in minor to moderate, beneficial, and minor, adverse impacts.

Presidio— Operations and maintenance under this alternative would result in minor to moderate, beneficial, and minor, adverse impacts.

San Francisco Port of Embarkation National Historic Landmark— Actions would be the same as alternative 1, with long-term

preservation of the contributing structures and landscapes of the district. Building 201 would continue to be used as the park headquarters and Lower Fort Mason would continue to be managed by the Fort Mason Foundation. The impact would be long term, negligible and beneficial. Potential future water shuttle access may be provided at one of the piers, but the effects of that proposal as well as the proposed F-Line rail extension, would be addressed in a separate environmental planning process. The anticipated impacts from these respective actions are long term, minor to moderate, adverse (water shuttle), and long term, moderate, adverse (F-Line).

Aquatic Park Historic District National Historic Landmark— Actions would be similar to those in alternative 1. Potential site and circulation modifications to accommodate transit improvements on the Van Ness Avenue corridor and overall wayfinding and park orientation signs, could have direct and indirect effects on the historic landscape of the district. Efforts would be made to minimize the effects on this historic landscape. A cultural landscape report would guide these changes. The potential impact would be long term, minor, adverse. This property is within and managed by San Francisco Maritime National Historical Park.

Fort Mason Historic District— With respect to the effects on the historic structures and landscape of this district, alternative 2 would be similar to alternative 1. Historic buildings would be rehabilitated and adaptively used to serve as a portal to the park and provide for uses such as a hostel and other overnight accommodations, park headquarters, and park and park partner offices and programs. Rehabilitation of Pier 4 to accommodate visitors would have result in loss of historic fabric and the addition of nonhistoric features. Cultural landscape resources in Upper Fort Mason would be preserved through rehabilitation. As a whole, with the incorporation of mitigation measures such as the provision for the preparation of historic structure reports and design guidelines, the actions proposed under this alternative would have a long-term, negligible to moderate, beneficial, and long-term, minor, adverse impact on the historic district.

Fort Miley Military Reservation— Same as alternative 1. The historic structures of West Fort Miley would continue to be preserved and the landscape enhanced to provide better connections for visitors to adjacent resources and sites. Landscape changes would include the provision of picnicking and group camping facilities and would be designed to be compatible with the historic setting. Park maintenance functions would continue to occur in the East Fort Miley historic warehouse and batteries. These actions would result in a long-term, minor, adverse impact.

Pumping Station 2, SF Fire Department Auxiliary Water Supply System— Same as alternative 1. No impacts on this property are anticipated. This property is within Fort Mason but is owned and operated by the City of San Francisco.

Camera Obscura— Operations and maintenance under this alternative would result in minor beneficial and minor adverse impacts.

Six-inch Gun No. 9— Operations and maintenance under this alternative would result in minor beneficial and minor adverse impacts.

San Francisco Veterans Affairs Medical Center— Continued operation of Fort Miley as a park maintenance facility would have negligible impacts on the adjacent Veterans Medical Center Historic District, which is owned and managed by the Department of Veterans Affairs.

China Beach— Same as alternative 1: some improvements to the existing array of visitor facilities and access would be made to support continued use of this popular site. Impacts would be long term, negligible, beneficial, and long term, minor, adverse.

This property needs to be assessed to determine national register eligibility.

Marine Exchange Lookout Station (Octagon House)— The Marine Exchange Lookout Station (Octagon House) would be rehabilitated and adaptively used to engage the public in the natural and human history of the coastal marine environment. which would have a long-term, moderate, beneficial. and long-term, minor, adverse impact. This property needs to be assessed to determine national register eligibility.

O'Shaughnessy Seawall— The historic seawall would be preserved and protected. Adjacent amenities such as the promenade, parking area, and restroom facilities that support visitor beach use of the area would be improved. This would have long-term, negligible to minor, beneficial, and long-term, minor, adverse impacts. This property needs to be assessed to determine national register eligibility.

Sutro District— Managed under an existing plan, no impacts on this property are anticipated under alternative 2. This district is managed by the park as a cultural resource but has been determined to not be eligible for the National Register of Historic Places in consultation with the California state historic preservation officer.

San Mateo County.

San Francisco Bay Discovery Site National Historic Landmark— Cultural landscape resources associated with San Francisco Bay Discovery Site National Historic Landmark on Sweeney Ridge would be preserved, enhanced, and interpreted. This would result in a long-term, negligible, beneficial impact.

Point Montara Light Station— Similar to alternative 1, the Montara Lighthouse and associated historic buildings and landscape would continue to function as a hostel and would support day-use programs for park stewardship and environmental education. The facilities would be preserved or rehabilitated as needed and the site interpreted. This would result in a long-term, minor, beneficial, and long-term, minor, adverse impact.

Rancho Corral de Tierra— If determined eligible for listing in the National Register of Historic Places, contributing historic structures and cultural landscape resources associated with the rural agricultural landscape at Rancho Corral de Tierra in San Mateo County would be preserved in balance with natural resource restoration goals. Compared to alternative 1, fewer and more primitive visitor amenities would be constructed. Unnecessary fire roads could be converted to trails or removed, if not identified as contributing landscape features. The preservation of these resources would have a long-term, minor, beneficial impact; however, the introduction of new elements and natural resource restoration activities could result in long-term, negligible to minor, adverse impacts. This property needs to be assessed to determine national register eligibility.

Shelldance Nursery— If determined eligible for listing in the National Register of Historic Places, transition from a commercial nursery to an area that provides a variety of visitor services and park operational needs would have a moderate beneficial and minor adverse impact, if carried out according to *The Secretary of the Interior's Standards for Historic Preservation* and if removal of any structures that may be deemed historic is avoided.

Conclusion. In conjunction with the effects from the actions common to all alternatives, alternative 2 would result in local, long-term, negligible to moderate, adverse, and local, long-term, negligible to moderate, beneficial impacts on historic structures, districts and landscapes. Impacts would be reduced by implementing mitigation measures. The park's management strategy for historic buildings, districts, and cultural landscapes encompass stabilization, preservation, and rehabilitation for new and continued uses. In

general, this would have a long-term, beneficial effect on these resources. In some instances, individual projects could result in long-term, moderate to major, adverse impacts, due to the level or amount of proposed change.

Impacts on Alcatraz Island National Historic Landmark would include minor, moderate, and major, adverse impacts with the potential loss of some contributing resources (structures and landscapes); however, actions would also result in minor to moderate, beneficial impacts on other contributing resources. Although some actions could result in an adverse effect on some individual features, taken together the actions would not result in an adverse effect on the overall integrity of the national historic landmark. Overall, those key features that define the essence of the landmark's integrity would be preserved.

Under alternative 2, the section 106 determination of effect on historic buildings, structures, districts and cultural landscapes in Golden Gate National Recreation Area, excluding Alcatraz Island National Historic Landmark, would be *adverse effect.* On Alcatraz Island, the section 106 determination of effect on historic buildings, structures and cultural landscapes would be *adverse effect.*

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Actions under alternative 3 would place an emphasis on the park's nationally important natural and cultural resources. The fundamental resources of each site would be showcased with the highest level of preservation, maximizing opportunities for adaptive reuse and rehabilitation of historic structures, districts, and cultural landscapes for park visitor enjoyment and understanding.

Similar to the other action alternatives, under alternative 3, the park and park partners would rehabilitate existing facilities to improve their condition to better welcome and support park visitors. Historic building and landscape rehabilitation would be in accordance with *The Secretary's Standards for Historic Rehabilitation* and, in some cases, may include construction of compatible additions or new features to accommodate a new use. Historic structures reports and cultural landscape reports would be prepared, as needed, in advance of preservation and rehabilitation project implementation.

Compared to existing conditions and the other action alternatives, alternative 3 would result in providing the greatest amount of public access to the park's numerous historic buildings and landscapes, allowing park visitors direct contact with these resources when possible. In San Mateo County, park managers would work with other land management agencies and communities to promote heritage tourism and explore opportunities for regional landscape management; these actions would have a beneficial impact on the long-term preservation and protection of historic structures, districts, and cultural landscapes. In order to successfully immerse visitors in the park's compelling sites and history, improved orientation and information services would be a key component of this alternative, which could require the introduction of new site furnishings and features in the park's landscape. Park staff would continue to conduct historic resource surveys, research, and determinations of eligibility for historic structures, districts, and landscapes that may be eligible for listing in the National Register of Historic Places. This information would be used to guide decisions regarding how historic structures, districts, and landscapes and their contributing features should be managed. Some new visitor amenities and facilities (restrooms, parking lots, trailheads, etc.) would be constructed to enhance the overall visitor experience as well as day-to-day park

operations (particularly in Marin and San Mateo counties). For any new development within a historic district or cultural landscape setting, an appropriate level of historic research, resource inventory, and assessment would be conducted in advance of design. In addition, design guidelines for a specific area would be prepared, when necessary, in advance to assure compatibility of any new planning, design, and construction within the historic setting. Careful design would ensure that the rehabilitation of historic buildings, structures, and landscapes would minimally affect the scale and visual relationships among significant landscape features.

Specific properties within the area of potential effect with the potential to be impacted by implementation of alternative 3 are discussed below.

Parkwide.

Seacoast Fortifications of San Francisco Bay— Under alternative 3, the park would pursue an ongoing program of stabilization, preservation, and interpretation of the seacoast fortifications that contribute to the NHL-eligible district. In cases where conditions warrant, restoration would be pursued as well, to provide for an immersive visitor experience that would help visitors understand the fortification's history. A preservation strategy for the park's seacoast fortifications would be prepared to guide the long-term treatment and management of these resources, given that each fortification is in a varying state of repair and provides different interpretive opportunities. As an example, restoration may be the preferred preservation treatment in some instances such as at Battery Townsley, Battery Mendell, and the Bird Rock Overlook area in the Marin Headlands would be rehabilitated and interpreted for visitor use. In addition to the stabilization and preservation of fortifications in Marin, those contributing historic seacoast fortifications on Milagra Ridge, Sweeney Ridge, and other locations in San Mateo County would also be preserved and interpreted. Overall, these preservation treatments for the historic fortifications and their landscaped settings would have long-term, minor to moderate, beneficial, and long-term, minor, adverse impacts.

Golden Gate Bridge— Continued operation and maintenance of the Presidio by the park would have negligible impacts on the adjacent Golden Gate Bridge, which is owned and operated by the Golden Gate Bridge District.

Marin County.

Forts Baker, Barry, and Cronkhite— Historic buildings at Forts Barry and Cronkhite would be rehabilitated, interpreted, and adaptively used and the coastal fortifications would be preserved to showcase the history of the military presence here and the area's conversion from military post to national park. Similar to the other action alternatives, historic buildings and landscapes would be rehabilitated and used for a variety of park programs and functions. Some structures may be restored to evoke a better understanding of specific periods of the military's era. Similar to alternative 1, the following actions could affect the cultural landscape of the district: comprehensive sets of improvements to trails, overlooks, visitor amenities; the rehabilitation and introduction of transit and orientation facilities; and natural resource enhancements. Some of these actions would enhance the historic setting while introducing compatible new elements into the landscape, while others would be noticeable changes that could potentially alter a character-defining feature of the landscape. Modifications to historic structures and landscape features would follow *The* Sec*retary of the Interior's Standards for the Treatment of Historic Properties* so as to minimize adverse impacts on the historic resources. With an emphasis on historic resource preservation, all of these actions would result in both long-term, negligible to minor, adverse impacts and long-term, minor to major, beneficial impacts.

More noticeable actions that could affect historic structures, as well as the surrounding historic landscape, include the removal of some of the Capehart housing, which needs to be assessed for historic significance and integrity, accompanied by new replacement construction of park facilities on the south side of Bunker Road. This would result in a long-term, minor to moderate, adverse impact.

Overall, these modifications would be noticeable and would result in a visual change to the district and to the individual landscape areas within the district. Under alternative 3, with the incorporation of mitigation measures, including the preparation of cultural landscape reports, historic structures reports, and design guidelines to ensure compatible new construction as described in part 8 of this document. The long-term impact would be minor to moderate and both adverse and beneficial.

Point Bonita Historic District— The treatment of this historic district would be the same as in alternative 1. Historic buildings and landscape features in the Point Bonita Historic District would continue to be preserved and interpreted, resulting in long-term, minor, beneficial, and long-term, minor, adverse impacts.

Sara Seaver Randall House— Would continue to be managed by Point Reyes National Seashore. No actions would be taken under alternative 3 that would have an impact on the site.

Hill 640 Military Reservation— Under this alternative, the historic structures and cultural landscape features associated with the historic coastal defense fortifications at the Hill 640 Military Reservation would be preserved and interpreted. Compared to the other action alternatives, the park would perform more extensive preservation work to allow increased visitor access and interpretation to this significant resource. This would result in a long-term, negligible to minor, beneficial, and long-term, negligible to minor, adverse impact.

Ranch M (Golden Gate Dairy)— Under alternative 3, this historic district would be managed to retain its pastoral landscape and historic structures. Buildings and landscape features that contribute to the ranch's national register eligibility would be rehabilitated and adaptively used for equestrian use and other recreational uses, park operations, and local community services. These improvements would result in a long-term, minor to moderate, beneficial, and long-term, minor, adverse impact.

Ranch A/B (Miwok)— Equestrian, environmental education and stewardship activities would continue in this area. Historic buildings and landscape features that contribute to the former ranch's national register eligibility would be rehabilitated and adaptively used for equestrian use. This would result in a long-term, minor to moderate, beneficial, and long-term, minor, adverse impact. The park would establish a visitor facility in the vicinity of the ranch to provide visitor orientation and basic amenities to support the recreational and educational uses nearby. These types of site changes (such as restrooms, improved parking, and visitor orientation/information) would have an indirect, local, long-term, negligible to minor, adverse impact on the district.

Bolinas Copper Mine— Would continue to be managed by Point Reyes National Seashore. No actions would be taken under alternative 3 that would have an impact on the site.

Miwok Trail— Cultural landscape resources associated with the Miwok Trail would be preserved and protected, which would have a long-term, negligible, beneficial, and long-term, minor, adverse impact.

San Francisco County.

Alcatraz Island National Historic Landmark— Alternative 3 would immerse visitors

extensively in all of the island's historic periods, utilizing as much as possible the historic resources as tangible evidence of the past. To accomplish this would require extensive stabilization, rehabilitation, and selective restoration work on the historic structures, buildings, and landscape features. This alternative would provide for most historic buildings to be preserved in "good" condition, and for the key landscape features, including small-scale elements such as fences, paths, and railings, to be preserved.

Specific actions would include the restoration of portions of Building 64 to interpret the post office, canteen, and a prison-era guard apartment; and restoration of the Guardhouse to better reveal the early military prison period (including removal of the boathouse addition). Other areas at Building 64 and around the arrival area would be rehabilitated for visitor services and administrative uses, and could include dorm-like overnight accommodations for program participants. The Main Prison Building (which includes the Main Cellblock, hospital wing, administration wing, and basement citadel) and adjacent areas would be rehabilitated and portions restored to provide visitors with greater opportunities to explore the federal penitentiary's history. The Post Exchange would be stabilized to allow visitors opportunities to explore its historic components. The lighthouse and surrounding area would be preserved with enhanced visitor access and interpretation. The Parade Ground would be rehabilitated to portray its historic periods and support year-round visitor exploration. Design for the Parade Ground's rehabilitation would incorporate measures to protect wildlife habitat. These actions would result in a long-term, moderate to major, beneficial, and long-term, minor, adverse impact.

The New Industries Building would be rehabilitated as a multipurpose facility for uses such as interpretive programs, special events, classrooms, and meetings. The Model Industries Building and adjacent courtyard would be stabilized and closed to visitors to protect nearby sensitive habitat. The Quartermaster Warehouse would be rehabilitated for park operational functions, including a preservation stewardship workshop. The Power Plant would be stabilized and the adjacent yard preserved for park operational needs. Significant historic resources along the perimeter of the island would be stabilized and preserved. These actions would result in long-term, minor to moderate, beneficial, and long-term, minor, adverse impacts.

Historic buildings and landscapes on Alcatraz Island could be adversely impacted over time from the effects of increased visitation to the island, especially with the provision of overnight visitor stays. This would result in a long-term, negligible to minor, adverse impact on historic structures and landscapes. However, the park would monitor the effects of increased visitation on historic resources and could modify visitor access and uses to further protect these resources and reduce this impact to negligible. In addition, the park's provision of regular patrols and visitor education programs about resource significance and protection (such as discouraging vandalism) would help to reduce these potential visitor impacts to no more than minor.

In conclusion, modifications to the contributing resources on Alcatraz Island would be noticeable and would result in long-term, minor to major, beneficial, and long-term, minor, adverse impacts. There could also be a long-term, negligible, adverse impact as a result of increased visitor access to sensitive resources.

San Francisco Port of Embarkation National Historic Landmark— Building 201 at Upper Fort Mason would be rehabilitated for ongoing use of park headquarters and to incorporate a new museum to showcase the military history of Fort Mason and the 20th century San Francisco Port of Embarkation. Other actions would be similar to those of the no-action alternative in that the Fort Mason Foundation would continue to manage

Lower Fort Mason and perform ongoing preservation and rehabilitation work on the contributing resources. The impacts on this landmark would be long-term, minor, beneficial, and long-term, minor, adverse.

Aquatic Park Historic District National Historic Landmark— Actions would be the same as in alternative 1 and could result in greater visitation along the waterfront access from Van Ness corridor and Fisherman's Wharf area to Pier 4 area, along with other potential site and circulation modifications to accommodate transit improvements in the area. New wayfinding and park orientation signs could have direct and indirect effects on the historic landscape of the district. Efforts would be made to minimize the effects on this historic landscape. A cultural landscape report would guide these changes. The potential impact would be long term, minor, adverse. This property is within and managed by San Francisco Maritime National Historical Park.

Fort Mason Historic District— Historic structures, buildings, and cultural landscape resources would be rehabilitated for interpretation of the installation's military and civilian history and for adaptive use. Compared with the no-action alternative, alternative 3 would result in a broader range of visitor uses within the buildings, including expanded overnight accommodations and an orientation/visitor center. Fort Mason would serve as the primary visitor entrance to Golden Gate National Recreation Area in San Francisco. Actions that could affect the historic landscape include circulation and wayfinding changes to improve adjacent transit and ferry connections. Pier 4 would be rehabilitated for use by visitors and would include the installation of interpretive exhibits. Developing the pier for use as an embarkation point to Alcatraz Island would result in minor to moderate adverse impacts on the pier's historic fabric. Landscape improvements would be consistent with the "Cultural Landscape Report for Fort Mason." While some actions may adversely impact individual features, taken as a whole—with the incorporation of mitigation measures such as the provision for the preparation of historic structure reports and design guidelines—these actions would have a long-term, minor to moderate, beneficial, and long-term, minor, adverse impact on the historic district.

Fort Miley Military Reservation— Historic buildings and landscape features associated with West Fort Miley would be preserved to showcase the area's military and maritime history. Similar to the no-action and other action alternatives, historic buildings at East Fort Miley would continue to be preserved for use by park maintenance and public safety operations. Significant character-defining features of the cultural landscape would be preserved while accommodating improved vehicle and trail access to East Fort Miley. These changes would be designed to be compatible with the historic setting. Overall, these actions would result in long-term, negligible to minor, beneficial, and long-term, minor, adverse impacts.

Pumping Station 2, San Francisco Fire Department Auxiliary Water Supply System— The historic Alcatraz pier (Pier 4), may be rehabilitated for use by visitors, which could result in modifications to the adjacent circulation system and landscape setting, as well as increased visitation along the immediate waterfront area. The historic building would not be directly impacted through these modifications, but these changes could result in a long-term, negligible to minor, adverse impact. This property is within Fort Mason, but is owned and operated by the City of San Francisco.

Camera Obscura— Operations and maintenance under this alternative would result in minor beneficial and minor adverse impacts.

Six-inch Gun No. 9— Operations and maintenance under this alternative would result in minor beneficial and minor adverse impacts.

San Francisco Veterans Affairs Medical Center— Continued operation of Fort Miley as a park maintenance facility would have negligible impacts on the adjacent Veterans Medical Center Historic District, which is owned and managed by the Department of Veterans Affairs.

China Beach— Same as alternative 1: some improvements to the existing array of visitor facilities and access would be made to support continued use of this popular site. Impacts would be long term, negligible, beneficial, and long term, minor, adverse.

Marine Exchange Lookout Station (Octagon House)— The building and adjacent landscape would be rehabilitated and adaptively used to engage the public in the natural and human history of the coastal marine environment, which would have a long-term, moderate, beneficial, and long-term, minor, adverse impact.

O'Shaughnessy Seawall— The historic seawall would be preserved and protected. Adjacent amenities such as the promenade, parking area, and restroom facilities that support visitor beach use of the area would be improved. This would have a long-term, negligible to minor, beneficial, and long-term, minor, adverse impacts.

Sutro District— Managed under an existing plan, no impacts on this property are anticipated from alternative 3. This district is managed by the park as a cultural resource but has been determined to not be eligible for the National Register of Historic Places in consultation with the California state historic preservation officer.

San Mateo County.

San Francisco Bay Discovery Site National Historic Landmark— Similar to alternative 1, under alternative 3 the site and its associated features would be preserved, enhanced, and interpreted. A hikers hut could be constructed in the vicinity as part of a system of trail amenities for the Bay Area Ridge Trail. Any new construction and development would be sited and designed away from the actual site so as not to directly affect the historic integrity of this site. Limited vehicular access to the discovery site would be permitted as well. This could result in increased visitation to the site, which would be monitored over time for any changes to the historic setting, landscape, and monuments to ensure long-term preservation. Overall, these changes would result in a long-term, minor, adverse impact.

Point Montara Light Station— Under alternative 3, the park would restore the historic structures and landscape features, remove nonhistoric structures, and develop new visitor programs. Overnight accommodations would continue and provide an immersive visitor experience into the historic life of lighthouse keepers. These changes would result in a long-term, moderate, beneficial, and long-term, minor, adverse impact.

Rancho Corral de Tierra— Actions proposed under alternative 3 would be similar to those under alternative 1. If determined eligible for listing in the National Register of Historic Places, contributing historic structures and cultural landscape resources associated with the rural agricultural landscape at Rancho Corral de Tierra in San Mateo County would be preserved in balance with natural resource restoration goals. New visitor amenities, including trailheads and trails, would be compatibly designed to blend in with the historic landscape. The preservation of these resources would have a long-term, minor, beneficial impact; however, the introduction of new elements and natural resource restoration activities could result in long-term, minor, adverse impacts.

Shelldance Nursery— If determined eligible for listing in the National Register of Historic Places, transition from a commercial nursery to an area that provides a variety of visitor services and park operational needs would have a moderate, beneficial, and minor, adverse impact, if carried out according to

The Secretary of the Interior's Standards for Historic Preservation and if removal of any structures that may be deemed historic is avoided.

Conclusion. Under alternative 3, the park's management strategy for historic buildings, districts, and cultural landscapes would generally be one of preservation, rehabilitation for new and continued uses, and some restoration to enhance the overall historic immersion visitor experience goals of this alternative. In conjunction with the effects from the actions common to all alternatives, alternative 3 would result predominantly in long-term, negligible to moderate, beneficial impacts on historic structures, districts, and landscapes. In some instances, individual projects could result in local, long-term, negligible to minor, adverse effects due to the level or amount of intervention and proposed modifications to a structure or site. Adverse impacts would be minimized by implementing mitigation measures.

With regard to Alcatraz Island National Historic Landmark, although some actions in alternative 3 could result in an adverse effect on some individual features, taken together the actions would not result in an adverse effect on the overall integrity of the national historic landmark. The impacts on historic structures and the cultural landscape would be noticeable and would result in long-term, minor to major, beneficial impacts. There could be a long-term, negligible impact as a result of increased visitor access to sensitive resources. Taken together, all of these actions would not result in an adverse effect on the overall integrity of the national historic landmark.

Under alternative 3, the section 106 determination of effect on historic buildings, structures, districts and cultural landscapes in Golden Gate National Recreation Area, excluding Alcatraz Island National Historic Landmark, would be *adverse effect*. On Alcatraz Island, the section 106 determination of effect on historic buildings, structures and cultural landscapes would be *adverse effect*.

Archeological Resources

No-action Alternative

Analysis. Currently, 7% of Golden Gate National Recreation Area has been surveyed for precontact and historic archeological resources. To date, approximately 263 archeological sites have been inventoried, but the significance of those sites requires further study and evaluation. Furthermore, comprehensive consultations with American Indian tribes regarding archeological sites with ethnographic significance in the park will continue into the future. As a result of this need for additional survey work and consultation, archeological resources are subject to potential deterioration, lack of adequate protection in some cases, and possible loss of integrity from natural processes, ongoing agricultural and ranching operations, inadvertent visitor activity, and vandalism.

The Muir Beach Archeological District and the Point Lobos Archeological Sites are currently subject to erosion and possible loss of integrity from natural processes and human activities such as inadvertent damage and vandalism. Thus, this alternative could have a permanent, minor to moderate, adverse impact on these archeological resources. The *King Philip* and *Tennessee* shipwrecks and associated remains are currently subject to deterioration and loss of integrity from natural processes such as ocean surf and human activities such as vandalism; thus this alternative could have a permanent moderate adverse impact on these archeological resources.

On Alcatraz Island, not much is known about any precontact and historic archeological resources. A comprehensive professional baseline archeological survey of the island and consultations with American Indian tribes regarding archeological sites with

ethnographic significance will continue to be needed. Park staff suspect that Alcatraz Island has potential for buried precontact and historic deposits associated with military, prison, and maritime commercial themes. On Alcatraz Island, just as with the rest of Golden Gate National Recreation Area, there is need for additional survey work and consultation; without this, archeological resources are subject to potential deterioration, lack of adequate protection in some cases, and possible loss of integrity from natural processes and human activities. The lack of survey and knowledge and possible loss of integrity from natural processes and human activities, as previously described, could have a permanent, minor to moderate, adverse impact on archeological resources.

Known precontact and historic archeological sites and districts would be treated as eligible for listing in the national register and would be protected, as would archeological components associated with already listed national register historic structures, districts, cultural landscapes, and national historic landmarks (see table 5). Additional site identification or evaluations would accrue slowly through project reviews, and by occasional strategic surveys and studies as funding allows. This alternative could have a minor to moderate adverse impact on cultural resources.

Conclusion. Little information is available concerning precontact and historic archeological resources in Golden Gate National Recreation Area and on Alcatraz Island. A comprehensive professional archeological survey has been conducted for only approximately 7% of the park's acreage.

Actions under this alternative could have a permanent, minor to moderate, adverse impact on archeological resources listed on table 5, or associated with the Muir Beach Archeological District and the Point Lobos Archeological Sites, and could have permanent, moderate, adverse impacts on the *King Philip* and *Tennessee* shipwrecks and associated remains.

Alcatraz Island has the potential for a wide range of buried precontact and historic deposits associated with its military, prison, and maritime commercial themes. The park staff continues to work in protecting and preserving known archeological resources. The lack of survey and knowledge and possible loss of integrity from natural processes and human activities, as previously described, could result in a permanent, minor to moderate, adverse impact on archeological resources.

Based on the above analysis, under this alternative the section 106 determination of effect on archeological resources in Golden Gate National Recreation Area and on Alcatraz Island would be *adverse effect*.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Marin, San Francisco, and San Mateo counties)

Analysis. Archeological sites continually deteriorate, due primarily to the effects of weather and gravity. Left alone, sites would inevitably degrade over time. However, impacts from human visitation and use contribute to the effects of natural agents of deterioration, and can substantially increase the rate of site deterioration. Archeological resources adjacent to or easily accessible from visitor use areas or trails would continue to be vulnerable to inadvertent damage and vandalism. Inadvertent impacts would include picking up or otherwise displacing artifacts, compaction of cultural deposits, and the creation of social trails (which can lead to erosion and destabilization of the original site composition). Intentional vandalism includes removing artifacts and probing or digging in sites. Inadvertent damage or vandalism would result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence.

Many such adverse impacts could be mitigated through additional stabilization of the site, the elimination of social trails to disturbed or vulnerable sites, and/or systematically collecting surface artifacts for long-term curation. Continued ranger patrol and emphasis on visitor education regarding the significance and fragility of such resources and how visitors can reduce their impacts on archeological resources, would discourage vandalism and inadvertent impacts and minimize adverse impacts. The actions under this alternative could result in permanent adverse impacts of minor to moderate intensity to archeological resources.

Strategic archeological surveys would be conducted of unsurveyed park areas based on their intended visitor use, expected construction, demolition, or ground disturbance, and/or the sensitivity of the area to the discovery of archeological sites based on a predictive site model and land use history. Identified sites would be evaluated for their significance, and those determined to be eligible for listing in the national register would be avoided, protected, preserved, and/or interpreted depending on expected effects on them. Unavoidable impacts would be mitigated in consultation, as appropriate, with associated native tribes or descendants, and/or the California state historic preservation office. Impacts expected would be permanent and of minor to moderate intensity.

Park staff would continue to work to protect archeological resources from unauthorized removal or other destructive actions. Modification or relocation of existing trails, and construction, development, or improvement of trails, roadways, turnoffs, picnic and camping areas, overlooks, buildings, parking areas, visitor amenities, and interpretive facilities could affect the integrity of some archeological resources, but every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigating procedures would be undertaken in consultation with the California state historic preservation office. Any adverse impacts would be permanent and of minor to moderate intensity.

Additionally, it is estimated that a substantial number of the park's archeological sites could be lost as a result of rising sea levels during the coming years. The National Park Service recognizes that archeological resources help connect visitors with the park and its values. Precontact archeological sites on park lands, which provide the last vestiges of sites associated with indigenous peoples in the region, were among the first sites in the park listed in the National Register of Historic Places. Mitigation is currently taking place for historic archeological sites, but to a lesser degree for precontact sites. Historic archeological resources may be impacted under this alternative, pursuant to consultation and in compliance with mitigation measures approved by the California state historic preservation office, whereas indigenous precontact sites under this alternative would be preserved intact in consultation with American Indian tribes and organizations. Any adverse impacts would be permanent and of minor to moderate intensity.

Under this alternative, some sites and districts like the Muir Beach Archeological District would be in the natural management or sensitive resource zones. Archeological resources would be strategically surveyed, evaluated, and would be provided stabilization, security, or other protection commensurate with their significance and sensitivity, including data recovery in the face of unimpeded natural processes; however, they would generally not be incorporated as visitor education opportunities in the park's interpretive programs. Although a few archeological resources in these zones could be lost to data recovery (resulting in permanent adverse impacts of moderate to major intensity), these actions would generally result in overall minor beneficial impacts on archeological resources.

Under this alternative, the Point Lobos archeological sites would be in the evolved cultural landscape zone. Archeological resources would be identified and stabilized as part of cultural landscape enhancement, and they would be used as visitor education opportunities to interpret human occupation of and interaction with the coastal environment. Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in minor beneficial impacts on archeological resources.

There are no proposed actions under this alternative that would affect the *King Philip* and *Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this alternative on these sites would be the same as those listed in the no-action alternative—permanent, moderate, and adverse.

On Alcatraz Island, within the diverse opportunities, evolved cultural landscape, and historic immersion zones, the archeological resources would be identified and may be stabilized for incorporation into visitor interpretive opportunities, thus enhancing their protection through increased awareness and understanding. In the natural and sensitive management zones, which generally cover the island's perimeter areas, archeological resources would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity. Implementing management actions that survey and treat archeological resources would have a minor beneficial impact. In areas that are managed for natural resources, there could be minor impacts due to erosion and other natural processes. Assessment would be conducted to determine to what extent historic archeological resources in nearshore sensitive resource zones would need to be recovered to enhance specially managed natural resources. Any adverse impacts would be permanent and of minor to moderate intensity.

Conclusion. Actions under this alternative could result in long-term, minor, beneficial impacts on the archeological resources in the Muir Beach Archeological District and the Point Lobos Archeological Sites and on Alcatraz Island. Permanent moderate, adverse impacts would continue to the *King Philip* and *Tennessee* shipwrecks and associated remains.

Under this alternative, the section 106 determination of effect on archeological resources in Golden Gate National Recreation Area and on Alcatraz Island would be *no adverse effect*. Impacts on the *King Philip* and *Tennessee* shipwrecks and associated remains are the same as those under the no-action alternative. Therefore, the section 106 determination of effects on these two archeological sites would be *adverse effect*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Actions under this alternative would result in impacts on archeological resources similar to those listed under alternative 1. Park staff would continue to work to protect archeological resources from unauthorized removal or other destructive actions. Coastal ecosystem restoration and rehabilitation of pastoral and rural landscapes could impact the integrity of some archeological resources. Accordingly, this alternative would require a detailed archeological resource stabilization and recovery plan to preserve the integrity of the park's archeological resources. As part of all earth-disturbing activities, every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigating procedures would be undertaken in consultation with the California state historic preservation office. Additionally, precontact archeological sites, which represent the last vestiges of remnant sites associated with indigenous peoples in the region, would be preserved intact in consultation with American Indian tribes and organizations. Any adverse impacts would be

permanent and of minor to moderate intensity.

Archeological resources, including the Muir Beach Archeological District and the Point Lobos Archeological Sites in the natural and sensitive resources management zones, which cover much of the park land in this alternative, would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity. However, they would generally not be incorporated as visitor education opportunities in the park's interpretive programs. Archeological resources in the evolved cultural landscape and historic immersion zones would be identified and stabilized, as part of cultural landscape enhancement and used as visitor education opportunities to interpret human occupation of and interaction with the coastal environment. Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in minor, beneficial impacts on archeological resources.

There are no proposed actions under this alternative that would affect the *King Philip* and *Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this alternative on these sites would be the same as those listed in the no-action alternative—permanent, moderate, and adverse.

In addition to the actions identified in the above analysis, managing archeological resources on Alcatraz Island would require a detailed archeological resource stabilization and recovery plan. As part of all earth-disturbing activities, every effort would be undertaken to avoid known or discovered archeological sites. In the evolved cultural landscape and historic immersion management zones, which form the central historical core of the island in this alternative, archeological resources would be identified and stabilized as part of cultural landscape enhancement and visitor interpretive opportunities. In the natural and sensitive resources management zones, which cover much of the rest of the island in this alternative, archeological resources would be identified, stabilized, or provided protection commensurate with their significance and sensitivity. Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in minor beneficial impacts on archeological resources on Alcatraz Island.

Conclusion. Although actions under this alternative could result in permanent adverse impacts of indeterminate intensity to some archeological resources, including the *King Philip* and *Tennessee* shipwreck sites and their associated remains, this alternative would generally have minor beneficial impacts on archeological resources in the park, including the Muir Beach Archeological District, the Point Lobos Archeological Sites, and on Alcatraz Island.

Under this alternative, the section 106 determination of effect on archeological resources in Golden Gate National Recreation Area and on Alcatraz Island would be *no adverse effect*. Impacts on the *King Philip* and *Tennessee* shipwrecks and associated remains are the same as those under the no-action alternative. Therefore, the section 106 determination of effects on these two archeological sites would be *adverse effect*.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Park staff would continue to work to protect archeological resources from unauthorized removal or other destructive actions. Generally, archeological resources under this alternative would be (1) identified, evaluated and then stabilized for interpretation purposes or as part of cultural landscape enhancement, or (2) incorporated into historic immersion opportunities and stabilized and protected to allow public

understanding without the threat of damage, removal, or vandalism. Although modification or development of facilities, and the rehabilitation or restoration of resources to immerse visitors in the compelling history and stories of the park's cultural sites could affect the integrity of some archeological resources, every effort would be undertaken to avoid disturbance of known or discovered archeological sites. If such sites could not be avoided, mitigating procedures would be undertaken in consultation with the California state historic preservation office. Although some archeological sites could be lost (resulting in permanent adverse impacts of minor intensity), actions under this alternative would generally have minor, beneficial impacts on archeological resources.

Archeological resources in the natural zone, including the Muir Beach Archeological District, would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity, but would generally not be incorporated as visitor education opportunities in the park's interpretive programs. Archeological resources in the evolved cultural landscape zone, such as the Point Lobos Archeological Sites, would be identified and stabilized, as part of cultural landscape enhancement and used as visitor education opportunities to interpret human occupation of and interaction with the coastal environment. Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in minor beneficial impacts on archeological resources.

There are no proposed actions under this alternative that would affect the *King Philip* and *Tennessee* shipwreck sites and their associated remains. Thus, the impacts of this alternative on these sites would be the same as those listed in the no-action alternative—permanent, moderate, and adverse.

On Alcatraz Island, alternative 3 is designed to enhance the contributing features of Alcatraz Island National Historic Landmark. The analysis, cataloging, and proactive recovery of archeological resources on Alcatraz Island would be given a high priority. These activities would result in enhancement of the island's cultural resource research and interpretive programs and would contribute to its emerging/growing park collections. Archeological resources in the evolved cultural landscape and historic immersion zones, which cover the majority of the island in this alternative, would be identified, protected, or stabilized. They then would be incorporated into historic immersion and visitor education interpretive opportunities or become a part of cultural landscape enhancement. Under this alternative, the preservation and interpretation of key archeological resources, and access to such resources illustrating the island's precontact and historic periods and themes, would be given high priority. As part of all earth-disturbing activities, except for the formal evaluation of archeological sites, every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigating procedures would be undertaken in consultation with the California state historic preservation office. Although some archeological sites could be lost (resulting in permanent adverse impacts of minor intensity), actions under this alternative would generally have minor, beneficial impacts on archeological resources on Alcatraz Island.

Conclusion. Although actions under this alternative could result in permanent adverse impacts of moderate intensity to some archeological resources, including the *King Philip* and *Tennessee* shipwreck sites and their associated remains, this alternative would generally have minor, beneficial impacts on archeological resources in the park, including the Muir Beach Archeological District, the Point Lobos Archeological Sites, and on Alcatraz Island.

Under this alternative, the section 106 determination of effect on archeological resources in Golden Gate National Recreation Area and on Alcatraz Island would be *no adverse effect*. Impacts on the *King Philip* and *Tennessee* shipwrecks and associated remains are the same as those under the no-action alternative. Therefore, the section 106 determination of effects on these two archeological sites would be *adverse effect*.

Ethnographic Resources / Traditional Cultural Properties

No-action Alternative

Analysis. Currently, there are no formally evaluated ethnographic resources or traditional cultural properties within Golden Gate National Recreation Area or on Alcatraz Island. However, Alcatraz Island was occupied by "Indians of All Tribes" from November 1969 to June 1971 as an internationally publicized protest to focus attention on the plight of American Indians and to assert the need for Indian unity and solidarity for achieving self-determination and securing political rights. Thus, the occupation increased awareness of the American Indian's political, economic, and social concerns and provided the foundation for what would become a political movement (the American Indian Movement) to promote cultural pride and to secure and protect Indian rights. The occupation resulted in the nation's increased awareness of American Indian concerns and issues and the establishment of D-Q University (a tribal community college that focuses on indigenous peoples) at Davis, California, and other institutions throughout the nation. Tangible evidence of the occupation on Alcatraz Island includes graffiti and physical alterations attributed to the American Indians' activities. Since the occupation, the island has become a symbolic focal point of American Indian pride and solidarity among relocated American Indians in the San Francisco Bay Area, as well as in the nation at large. Thus, the National Park Service, in recognition of the ethnographic significance of Alcatraz Island for American Indians and the island's potential for listing in the National Register of Historic Places as a traditional cultural property, is in consultation with American Indians regarding the identification, preservation, and interpretation of the island's ethnographic resources. This action would have a long-term, negligible to minor, beneficial impact to the resource.

Conclusion. Currently, there are no formally evaluated ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area and on Alcatraz Island. However, the National Park Service recognizes the ethnographic significance of Alcatraz Island for American Indians as a result of the island's occupation from 1969 to 1971 and thus its potential for listing in the National Register of Historic Places as a traditional cultural property. This action would have a long-term, negligible to minor, beneficial impact to the resource.

Under this alternative, the section 106 determination of effect on ethnographic resources / traditional cultural properties for Golden Gate National Recreation Area and Alcatraz Island would be *no adverse effect*.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Although Alcatraz Island has ethnographic significance for American Indians, these ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area have not been formally evaluated. On Alcatraz Island, some archeological sites and features with ethnographic significance and some resources having associations with the occupation of 1969 to 1971 could be lost due to erosion or other natural processes such as

weathering, under this alternative. This alternative's emphasis on connecting people with the park's resources and stories would build and expand upon the National Park Service's ongoing consultation efforts with American Indians for the identification, preservation, and interpretation of ethnographic resources on Alcatraz Island. This action would have a long-term, minor beneficial impact to the resource.

Conclusion. Although Alcatraz Island has ethnographic significance for American Indians, these ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area have not been formally evaluated. Identification, preservation, and interpretation of ethnographic resources on Alcatraz Island would be enhanced as a result of expanding NPS consultations with American Indians. This action would have a long-term, minor beneficial impact to the resource.

Under this alternative, the section 106 determination of effect on ethnographic resources and traditional cultural properties in Golden Gate National Recreation Area and Alcatraz Island would be *no adverse effect*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Although Alcatraz Island has ethnographic significance for American Indians, there are no formally evaluated ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area.

On Alcatraz Island, some archeological sites and features with ethnographic significance and some resources having associations with the occupation of 1969–1971 could be lost due to erosion or other natural processes. A minimum amount of stabilization would be afforded ethnographic resources so that the island's integrity as a potential traditional cultural property would not be compromised. Additionally, this alternative's emphasis on providing visitors with opportunities to engage in Alcatraz Island's isolation, natural resources, and layers of history via ecotourism, outdoor learning, and natural and cultural resource stewardship programming would build and expand upon the National Park Service's ongoing consultation efforts with American Indians for the identification, preservation, and interpretation of ethnographic resources on Alcatraz Island. This action would have a long-term, minor beneficial impact to the resource.

Conclusion. Although Alcatraz Island has ethnographic significance for American Indians, there are no identified or recognized potential ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area. Ethnographic significance and some resources having associations with the occupation of 1969–1971 could be lost due to erosion or other natural processes such as weathering under this alternative; a minimum amount of stabilization would be afforded ethnographic resources so that the island's integrity as a potential traditional cultural property would not be compromised. This action would have a long-term, beneficial impact to the resource.

Under this alternative, the section 106 determination of effect on ethnographic resources / traditional cultural properties in Golden Gate National Recreation Area and Alcatraz Island would be *no adverse effect*.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Although Alcatraz Island has ethnographic significance for American Indians, these ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area have not been formally evaluated.

Under this alternative, which is designed to enhance the contributing features of Alcatraz Island National Historic Landmark, analysis and cataloging of ethnographic resources on Alcatraz Island in consultation with American Indian tribes and groups would be given a high priority, thereby enhancing the island's cultural resource research and interpretive programs and contributing to its emerging and growing park collections. The island's potential for listing as a traditional cultural property in the National Register of Historic Places would also be evaluated and studied in consultation with American Indian tribes and groups. This action would have a long-term, minor beneficial impact to the resource.

Ethnographic resources in the evolved cultural landscape and historic immersion zones, which cover the majority of the island in this alternative, would be identified, protected, and stabilized. Ethnographic resources that are not archeological sites could be rehabilitated or restored. They would be incorporated into historic immersion / visitor education interpretive opportunities or become part of cultural landscape enhancement. Under this alternative, preservation and interpretation of, as well as public access to, key ethnographic resources illustrating the island's precontact and historic periods and themes would be given high priority. This action would have a long-term, minor beneficial impact to the resource.

Conclusion. Although Alcatraz Island has ethnographic significance for American Indians, there are no formally evaluated ethnographic resources or traditional cultural properties in Golden Gate National Recreation Area. On Alcatraz Island, analysis and cataloging of ethnographic resources and the evaluation of the island's potential for listing in the National Register of Historic Places as a traditional cultural property in consultation with American Indian tribes and groups would be given higher priority than other areas of Golden Gate National Recreation Area. These actions would enhance the island's cultural resource research and interpretive programs and contribute to its emerging and growing park collections. This action would have a long-term, minor beneficial impact to the resource.

Under this alternative, the section 106 determination of effect on ethnographic resources / traditional cultural properties in Golden Gate National Recreation Area and Alcatraz Island would be *no adverse effect*.

Park Collections

No-action Alternative

Analysis. According to NPS *Management Policies 2006*, the National Park Service would collect, protect, preserve, provide access to, and use objects, specimens, and archival collections to aid understanding among park visitors, and to advance knowledge in the humanities and sciences. Further, collections management facilities need to accommodate the special needs of park collections for long-term preservation and protection by ensuring that they are stored in energy efficient buildings. Director's Order 24: *Museum Collections Management* (September 2008) provides further guidance, standards, and requirements for preserving, protecting, documenting, and providing access to and use of NPS collections.

Golden Gate National Recreation Area's 2009 *Collection Management Report* documented 4,210,233 items in the park collections; these include items from the park's coastal defense fortifications and military installations. Additionally, the park collections include items from Alcatraz Island, such as original FBI evidence from the 1962 Alcatraz escape, as well as original uniforms, other accoutrements, and everyday objects from the island.

The park collections are currently stored in 15 different facilities throughout the park that function as visitor centers, interpretive

exhibits, or dedicated storage areas. Of the four largest storage repositories, two are in buildings owned by the Presidio Trust with no lease agreements in place. This places the park collections in a vulnerable position because of potential eviction and deteriorating structural conditions.

The no-action alternative would continue to make incremental improvements on existing facilities. Improvements would include consolidating storage from other deficient structures and installing more compact shelving to increase the usable storage footprint threefold. The National Park Service would also formalize the use of Building 667 through an agreement with the Presidio Trust. Another option to be explored under the no-action alternative is storing oversized collections in a larger joint storage facility that consolidates collections from all national park sites in the San Francisco Bay area. This proposal is outlined in the *Bay Area Museum Resource Center Plan* (2010).

These measures are intended to improve the long-term preservation of park museum collections; however, there are no formal agreements for long-term use of facilities in the Presidio (buildings 002 and 667). An unmet need under this alternative is public space for exhibits and programs that engage visitors in park collection stewardship and preservation activities.

Conclusion. The conditions for park collections would be improved to meet NPS standards for long-term preservation, protection, and use. Thus, continuation of current management of park collections would be expected to have short-term, minor, beneficial impacts on the park collection.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. In addition to the actions proposed for the park collection described under the "Actions Common to All Alternatives" section, in which the collections are consolidated into one or more facilities, alternative 1 would allow the incorporation of artifacts into visitor experience on a case-by-case basis at sites that are managed for historic immersion. This action would help visitors to better understand the historic context of a particular site and how park collections are inextricably linked to the park's historic resources. Use of these artifacts would still require respect for NPS standards for the preservation and protection of park collections. The public's awareness of the park collections would be increased and could result in increasing donations and support for "growing" and conserving the collections, thus resulting in overall long-term, minor beneficial impacts.

Conclusion. Incorporating the park collections in ways that enhance visitor experience and help expose the values of the collection while still meeting NPS preservation standards would have a long-term, minor beneficial impact on the value of the collections.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. In addition to the actions proposed for the park collections described under the "Actions Common to All Alternatives" section, in which the collections are consolidated into one or more facilities, the actions under alternative 2 would increase the ecosystem management approach of the alternative by generating more specimens for the natural research collection. This action would contribute to the monitoring and studies associated with influence that climate

change could have on the park's natural resources. The result of improving the natural resource portion of the park collections could result in improved understanding of park resources and to increased access for researchers and managers to a body of knowledge that is necessary for future management decisions. The actions under alternative 2 would have a long-term, minor beneficial impact to the park collections.

Conclusion. The increased emphasis of collecting and preserving natural resource specimens would have a long-term, negligible, and minor beneficial impact to the park collections.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. In addition to the actions proposed for the park collection described under the "Actions Common to All Alternatives" section in which the collections are consolidated into one or more facilities, the actions under alternative 3 would include treatments of historic buildings and cultural landscape resources that range from upgrades to exhibits and furnishings to more complete restoration. The goal of these actions would be increasing access to and interpretation of some of the park's most significant resources. A larger number of artifacts and archival items would be prominently displayed for visitor education and interpretation under this alternative, thus enhancing visitor experience, resulting in a beneficial impact. The public's awareness of the park collections would be increased and could result in increasing donations and support for "growing" and conserving the collections, thus resulting in overall long-term, minor beneficial effects.

Conclusion. Incorporating the park collections in ways that enhance visitor experience and help expose the values of the collection while still meeting NPS preservation standards would have a long-term, minor beneficial impact on the value of the collections.

VISITOR USE AND EXPERIENCE

No-action Alternative

Analysis. In the no-action alternative, visitors would continue to access a diversity of recreational opportunities in a wide range of settings throughout Golden Gate National Recreation Area. The park's extensive system of hiking, bicycling, and equestrian trails would be available for visitors and residents. Overnight camping and lodging opportunities would continue. Beach recreation, along with wildlife viewing and scenic touring, would also be important components of the visitor experience. Continuing these visitor opportunities provide for a long-term, moderate, beneficial impact to visitor experience.

During scoping and in recent visitor surveys, most respondents acknowledged their enjoyment of the park's visitor opportunities and suggested that the variety of activities should be maintained. Some people noted concerns about any further regulation or reduction of recreation opportunities, particularly for mountain bikers, equestrians, and dog owners. There was also interest in additional recreation opportunities, particularly more and different trail connections. There were some concerns expressed about conflicts between recreation activities that share facilities and areas. The park staff would continue to work to improve on user conflict situations and conditions that currently contribute to long-term, minor, adverse impacts within the park. The park staff would also continue to complete trail improvements identified in the Trails Forever program, focusing on the California Coastal Trail and its connectors between Muir Beach and Mori Point.

A variety of educational and interpretive programs would continue to be offered by

the National Park Service and its partners throughout the park. Continuing the current opportunities would have a long-term, minor, beneficial impact. Some of the public has expressed interest in having more interpretive and educational opportunities, including more onsite interpretive materials and programs. In addition, a need has been expressed for increasing outreach to diverse audiences. Access to the park collections and the integration of the collection into interpretive and educational programming and facilities have been identified as needs. This alternative would not provide these opportunities, resulting in a long-term, minor, adverse impact.

Visitor access to the various park sites would continue via multiple modes of auto, transit, bicycle, and pedestrian access. Some park sites are challenging to reach, given limited transit options and parking infrastructure, congested roadways, and conflicts between autos and bicyclists or pedestrians. There has been a substantial amount of feedback from the public regarding a desire to explore the expansion and enhancements of alternative modes of access to and between park sites to provide easier access, reduced traffic congestion, and orientation opportunities. In addition, the need for more signs, maps, and orientation information to help visitors explore the park has been mentioned. Visitors have access to most of the sites within Golden Gate National Recreation Area. There are some areas that have restricted access to protect sensitive resources or visitor safety. In addition, some areas are restricted for certain types of activities. The San Mateo County park lands have minimal facilities and services to support visitation, but access is permitted. Overall, continuing the current conditions regarding access would resulted in long-term, minor to moderate, adverse impacts on visitor experience.

Finally, there are locations within the park where visitor safety is an issue. Use conflicts between multiple modes of transportation are a concern in certain areas. Use conflicts between types of recreation activities can also occur and cause both real and perceived safety problems such as conflicts between bicyclists and equestrians. In addition, the park faces safety concerns that are typical of being in close proximity to a large urban area. The actions previously described would have a long-term, minor to moderate adverse impacts on visitor experience.

On Alcatraz Island, the primary visitor activities of visiting the Main Cellhouse and enjoying the sights and sounds of the island in the middle of the bay would continue in this alternative; a long-term, moderate, beneficial impact. The existing interpretive programs would also continue to focus primarily on the military history and federal prison-era stories. In addition, visitors would have opportunities for self-guided exploration on only a small portion of the island.

During scoping for the plan, there were some mentions of additional recreation opportunities that were desired including more trail access around the island, more access to a larger number of structures, and overnight opportunities. Further, some visitors have expressed interest in more diverse interpretive programs. Visitors are provided limited opportunities to explore the historic military fortification and Citadel that are under the federal prison. The lack of some of these desired improvements would be a long-term, minor to moderate, adverse impact on those visitors seeking these opportunities.

Alcatraz continues to provide outstanding opportunities for understanding the stories and structures associated with the federal penitentiary period of the island. The audio tour is popular with visitors and gives them an excellent understanding of life on "the Rock." The audio tour has also provided a means to better distribute the flow of visitors and reduce noise associated with large groups visiting the cell house. The National Park Service and its partners have also managed the levels of use visiting the island to help

control issues associated with crowding and conflicts resulting in a long-term, moderate, beneficial impact. There are isolated occasions and certain locations where crowding and use conflicts do occur resulting in long-term, minor, adverse impacts. In particular, certain locations along the walk to the cell house can sometimes become crowded, and there are occasional conflicts between the visitor tram and pedestrians during high-use days.

Alcatraz Island also supports one of the largest concentrations of nesting waterbirds in San Francisco Bay. Visitors have some opportunities to learn about and observe the colonies as part of their visit to the island; a long-term, minor, beneficial impact for visitors interested in understanding the important role the island plays in the ecological system of the bay. However, many areas of the island are currently closed during breeding season to protect the colonies from human disturbance. This results in long-term, minor, adverse impacts on visitors who may want to explore these areas. In addition, the sights and smells associated with large numbers of birds during the nesting season has resulted in some minor, adverse impacts on visitor experience.

Visitors have access to the island via the NPS concession-run ferry. The ferry ride to the island is one of the highlights of the visitor experience given the views of the island and the city, along with the orientation and interpretive information provided; a long-term, minor, beneficial impact. There are times when tickets are sold out to the island and some visitors are unable to take a trip to the island at their desired date and time resulting in a long-term, moderate, adverse impact on visitor experience. During scoping for this plan, some members of the public expressed interest in having alternative access opportunities to the island by motorized and nonmotorized boats. This alternative would not explore additional access opportunities causing a long-term, minor, adverse, impact.

Visitor safety at Alcatraz Island is generally good in the no-action alternative, although there are some safety issues associated with the deteriorating condition of historic structures—a long-term, minor, adverse impact.

Conclusion. The no-action alternative for Golden Gate National Recreation Area would result in long-term, minor to moderate, beneficial impacts from continued opportunities to access high-quality resource-dependent visitor opportunities and experience the natural, historic, and scenic qualities of the park. Visitors would have extensive trail, beach, and educational opportunities, which are some of the most valued activities in the park. However, minor to moderate adverse impacts on visitor experience from traffic congestion, use conflicts, limited facilities in San Mateo County, and restricted access to a few desired locations would continue.

The no-action alternative for Alcatraz Island would result in long-term, minor to moderate, beneficial impacts from continued opportunities to access the cell house and the immediate surrounding landscape. In addition, high-quality interpretive and educational programs and materials would continue to be provided. However, minor to moderate adverse impacts on visitor experience from conflicts with birds, limited access to areas and structures on the island, and some visitor crowding would continue.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. The emphasis of alternative 1 for Golden Gate National Recreation Area is connecting people with the parks. This alternative would increase the diversity of recreational opportunities offered throughout the park and encourage wider participation by the local and regional

population, including those that are not traditional park visitors. The establishment of recreation "portals," or locations from which multiple activities may be staged and initiated, is a primary component of this alternative. These portals would be in Tennessee Valley, Marin Headlands, Upper Fort Mason, and Rancho Corral de Tierra. The portals would include trailheads and other visitor facilities to better support access to a diversity of recreation opportunities, and help connect visitors with the information and support services they need to plan and enjoy their visit to the park. These efforts to welcome and orient the park visitor would have a long-term, moderate, beneficial impact on the visitor use and experience at the park.

Rehabilitation, expansion, and upgrades to existing facilities, including trails, trailheads, campsites, picnic areas, and parking would better support visitor activities throughout the park, including community based park stewardship programs. In particular, enhancements to park trails would be beneficial because the trails are one of the most important aspects of visitor opportunities, and these improvements were highly sought after by the public. New facilities are also proposed in key park locations in this alternative including warming huts; a variety of overnight accommodations, from camping to rustic cabins; stewardship centers; picnic facilities; and trails. Establishing these facilities would result in a long-term, moderate, beneficial effect on visitor opportunities and the facilitation of visitor activities throughout the park lands.

Under alternative 1, existing recreation activities would continue and be better supported through the facilities and access improvements already mentioned. Some activities would be expanded in this alternative, including educational and stewardship opportunities, and public equestrian programs and trailhead facilities. Equestrian facilities would be retained and improved at Rancho Corral de Tierra to expand public access and related benefits. These activities would allow the park staff to engage a wider audience and better demonstrate the unique and interesting resources found throughout the park. Further, scenic viewing throughout the park would be enhanced at key points through the addition of overlooks, landscape and facility restoration, and improvements for nonautomobile access to park sites. These actions would result in long-term, moderate, beneficial, impacts.

Stewardship and volunteer activities would be enhanced in this alternative, resulting in a long-term, moderate, beneficial impact. New stewardship and educational facilities are proposed at several park locations. Efforts for programming and educational materials by park staff and partners would be purposively aimed at engaging a wider audience, as well as enhancing individual understanding of park resources and values.

Public access to park sites, including parking improvements, public transportation connections, and multimodal access would be enhanced as a result of the alternative, resulting in long-term, moderate, beneficial impacts. Improved public transportation opportunities would help connect a larger audience to park sites, offer better connections between sites, and reduce use conflicts. Further, some of the improvements would allow for easier access to busy sites, reducing visitor frustration and improving the quality of park visits.

Visitor safety would benefit by several actions in this alternative resulting in long-term, moderate, beneficial impacts. Implementing roadside improvements to State Route 1 and Panoramic Highway would benefit visitors with better wayfinding, overlooks for safe scenic viewing, and more separation between auto and bicycle use. Other safety improvements could include enhancements to multimodal transportation options to ease use conflicts and road congestion during peak times. Finally, increased ranger presence throughout the park lands, particularly in San Mateo County, would

improve response capabilities for park staff. However, the addition of new multiuse trails may cause a small amount of increased conflicts among visitors.

Restrictions on public access in sensitive resource zones would result in some long-term, minor, adverse impacts on visitor access and opportunities for recreation, but effective educational programming and information associated with these areas could also improve visitor understanding of these highly sensitive and exceptional resources.

On Alcatraz Island, alternative 1 would offer a wider variety of settings, experiences, and activities for visitors to enjoy. Stewardship activities would be a focus of this alternative to increase visitor understanding and appreciation of the unique and diverse natural and cultural resources on the island. In addition to telling the stories of the infamous prison history, the National Park Service would offer visitors opportunities to understand other historic periods and the island's natural history, as well as to enjoy a diversity of scenic and recreational experiences on the island, including special events. Increased preservation, interpretation, and reuse of historic buildings would expand the range of activities for visitors and allow them to better understand the lives of people who lived and worked in those buildings, resulting in long-term, moderate, beneficial impacts.

Further, this alternative could increase visitor amenities at key locations including food service at Building 64. This alternative also includes additional strategies in core visitor use areas, such as removal of the ruins on the parade grounds to minimize the conflict between visitors and birds, thereby increasing access and improving the experience in these areas. This wider range of activities, settings, and services would likely appeal to a wider audience of participants and would also likely encourage an increase in repeat visitation. Further, this alternative would allow for a greater dispersion of visitors throughout the island, helping to minimize crowding at key sites like the cell house. These actions would have a long-term, moderate, beneficial impact on visitor experience.

Visitor safety would benefit through the preservation of the buildings as well as through increased bird management, resulting in long-term, minor, beneficial impacts. While reduced crowding could increase safety in some areas, allowing visitors to explore more of the island's rugged and natural settings could bring about more incidents.

Conclusion. The actions proposed in alternative 1 for Golden Gate National Recreation Area would result in long-term, moderate, beneficial impacts on visitor experience. The diversity of recreational opportunities provided, the new and enhanced visitor support facilities, and the purposeful effort to engage a more diverse audience would have a positive and important impact on visitor experience in the park. Further, the emphasis on improved access, particularly transportation connections, would be a beneficial impact on visitor experience by reducing traffic congestion and use conflicts.

Alternative 1 would result in long-term, moderate, beneficial impacts on visitor experience on Alcatraz Island. The enhancements to the park setting through increased preservation of the structures; the increased access to the island's various layers of historic resources and natural settings; and the purposeful effort to increase programming options and connect with a more diverse audience would help create this long-term, moderate, beneficial impact. The number of visitors who could be accommodated on the island may also be slightly increased upon implementation of this alternative given the increased number of opportunities and the ability to better disperse visitors, resulting in a long-term, minor, beneficial impact.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Alternative 2 proposes a visitor experience that is focused on forging individual connections with the park's natural and cultural resources through more natural and challenging visitor opportunities and enhanced stewardship activities. Visitors would still have a diversity of recreation activities available to them, but there would be an emphasis on encouraging more self-reliant and more natural and wild experiences throughout much of the park lands. For those visitors who enjoy solitude, natural quiet, and some challenge during their visit to the park, this alternative would generally result in long-term, minor, and beneficial impacts. In addition, those visitors who enjoy connecting to park lands via stewardship and educational programs would also benefit from this alternative. However, for those visitors who prefer a wider range of activities and more support services to facilitate their visit, this alternative would have some long-term, minor, adverse impacts.

Some visitor facility improvements are proposed in this alternative for key locations throughout all three counties. These facilities would improve access to select sites, better connect sites within the park, and facilitate stewardship and education opportunities, resulting in long-term, moderate, beneficial impacts. For example, upper Fort Mason would serve as the primary portal for stewardship and participatory science activities with access to programs throughout the park, allowing these opportunities to be better marketed, coordinated, and facilitated. Alternative 2 also proposes the removal of some facilities. Equestrian facilities at Rancho Corral de Tierra would be removed or relocated farther from coastal streams to allow enhancement or restoration of the stream areas. While removal of facilities could have an adverse impact on the experience for some visitors who have relied on those facilities, it could also be beneficial to others who want to immerse themselves in a more natural environment and participate in opportunities that are more challenging.

Most of the park's current visitor activities would be maintained; however, there may be more regulations and restrictions on access to better protect resources in this alternative. Further, visitor opportunities may be relocated or concentrated to reduce the "footprint" on park lands and create a more sustainable system of recreation facilities. Alternative 2 also recognizes several sensitive resource areas, and accordingly requires limitations on visitor access to those areas. These restrictions and regulations could have a long-term, minor to moderate, adverse impact on some visitors in terms of visitor opportunities, with the greatest effect on local visitors who frequent these areas on a regular basis. Some of the areas with more substantial changes in visitor access and regulations include Slide Ranch, Fort Funston, Rancho Corral de Tierra, and the southern portion of Ocean Beach.

Visitor activities associated with immersion in and exploration of natural and cultural landscapes would be enhanced in this alternative, with plentiful opportunities for those who seek solitude, quiet, and contemplation. Trail connectivity and related improvements would allow a more diverse visitor population to enjoy trail experiences with less conflict and more focus on enjoying the setting. Scenic viewing would be enhanced in this alternative through removal of some facilities and the addition of new overlooks. Maintaining low levels of development, removing some facilities, and restoring landscapes would provide what many members of the public identified as one of the most highly desired functions of the park: to act as a green retreat from the urban environment of San Francisco. These actions would have a long-term, minor to moderate, beneficial impact for visitors seeking these types of settings and opportunities.

Park staff and park partners would work toward more diverse, frequent, and better coordinated natural and cultural resource

stewardship and restoration activities in this alternative. Stewardship programs would allow local residents to better understand and appreciate the natural settings within the park and deepen participants' commitment to long-term protection of its resources. Further, this alternative would include additional programming and interpretation regarding the park's natural and cultural resources and related stories. These learning opportunities would be enhanced through the extensive trail system that would further highlight the park's diverse ecosystems and rich cultural history, resulting in long-term, moderate, beneficial impacts.

Access to some areas would become more difficult by personal vehicle and may generally be more regulated; however, associated public transportation services and nonvehicular access options would be improved. Improved public transportation opportunities would help connect a larger audience to park sites, better connect visits between sites, and reduce use conflicts. Further, some of the improvements would allow for easier access to busy sites, reducing visitor frustration and improving the quality of park visits. These actions contribute to a long-term, moderate, beneficial impact. In alternative 2, if a slide impacts State Route 1 near Slide Ranch in Marin County, the National Park Service could encourage Caltrans to stabilize and abandon this section of road. This action could inconvenience local residents and park visitors traveling along this route and would result in a long-term, moderate, adverse impact.

Visitor safety would increase due to several actions in this alternative, resulting in long-term, moderate beneficial impacts. If successful in promoting access improvements to park lands in the State Route 1 and Panoramic Highway area, visitors would benefit from better wayfinding, safer overlooks for scenic viewing, and better separation between auto and bicycle use. Other safety improvements include enhancements to multimodal transportation options to ease use conflicts and road congestion during peak times. Finally, increased ranger presence throughout the park lands, particularly in San Mateo County, would improve response capabilities for park staff.

On Alcatraz Island, alternative 2 would highlight the concept of isolation on the island, which is a recurrent theme in the island's cultural and natural history. Visitors would have opportunities to experience first-hand the island's isolation, natural systems, and layers of history. Ecotourism, outdoor learning, and natural and cultural resource stewardship programs would be the focus of this alternative, deepening visitor understanding of these topics as they relate to the island. This would benefit those visitors with interest in these topics and would encourage all visitors to take away more than just the federal penitentiary story. The diversity of activities available on the island would be increased given the additional emphasis on increasing visitor understanding of the natural resources on the island. This would include programming, stewardship, and related overnight opportunities that would be new options for visitors to the island. There would also be increased opportunities for wildlife and scenic viewing, and hiking around the perimeter of the island. Expanding visitor opportunities could have a long-term, moderate, beneficial impact to visitor experience.

It is likely these actions would appeal to a different audience than those who primarily visit the island for its historic resources. However, the emphasis on promoting the natural values of the island would also potentially increase the conflict between visitors and birds in core visitor use areas, resulting in a long-term, moderate, adverse impact on visitor experience during the nesting season. Further, there has been public interest in accessing many of the closed buildings on the island; this alternative would increase visitor access to some while continuing to limit access to others. This would result in a long-term, minor, adverse impact.

This alternative proposes additional visitor access restrictions in the waters surrounding the island to protect coastal resources and seabird colonies. These regulations would have an adverse impact on some visitors who enjoy navigating the waters in this area (via private boats and harbor tours), and enjoy the views of the island from close-up, resulting in a long-term, minor, adverse impact to water-based recreation.

Preservation of the buildings and spaces where visitors would be allowed would result in greater levels of visitor safety. There may be additional conflicts associated with visitors and birds, but it is unlikely that these conflicts would result in any significant concerns related to visitors' health and safety.

Conclusion. The actions proposed in alternative 2 for Golden Gate National Recreation Area would result in long-term, minor to moderate, beneficial impacts on visitor experience. The visitor experience would be improved regarding the depth and content of educational programming, interpretation, and resource stewardship; along with the preservation and promotion of visitor activities focused on immersion in the natural and cultural settings unique to the park. Visitors would gain a better understanding of park resources and values. However, the regulation and restrictions on some visitor activities and access to some areas might not encourage as much connection to the diverse local and regional population, and may have a long-term, moderate, adverse impact on repeat visitors who have a long-standing attachment to certain locations or activities that may be regulated or restricted.

On Alcatraz Island, alternative 2 would result in long-term, minor to moderate, beneficial impacts on visitor experience given the actions that would increase understanding and appreciation of the island's important role in the marine ecosystem and related activities and programming. However, there would be long-term, moderate, adverse impacts on visitor experience in this alternative due to the increased interaction and related conflicts between visitors and birds during the nesting season, and the restricted access to desired locations and structures on the island.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Alternative 3 proposes a visitor experience that is focused on the nationally significant sites and resources found throughout the park. Visitors would have a diversity of recreational and educational opportunities centered on the park's iconic sights, structures, and stories. There would be many opportunities for first-hand learning. Visitors would have the opportunity to immerse themselves in a historic setting, and participate in stewardship activities at key sites. The natural and cultural resources would be preserved to their highest level of quality, providing the best opportunity for visitors to understand and forge a connection with the resources and values of the park, as well as the larger national park system. Because the large expanse of undeveloped open space is one of the park's fundamental resources and values, the park would still provide many opportunities for those visitors who enjoy solitude, natural quiet, and some challenge during their visit.

Much of the visitor facility improvements in this alternative focus on rehabilitation of and upgrades to existing facilities that would support visitor understanding and access to key sites throughout the park. In Marin County, one of the most substantial differences in this alternative occurs in the area within and around Forts Barry and Cronkhite where the structures and landscapes would be restored to showcase the stories of military history and the transition from U.S. Army post to national park. To facilitate visitors' visits and understanding of this part of the park, a new visitor center would replace the housing infrastructure at the Capehart housing area. In addition, trails and roads in the area would

be managed to connect visitors to the important historic and natural resource stories.

In San Francisco County, facility improvements include dedication of more structures at Fort Mason to visitor services; the area would serve as the primary visitor entrance to the park with improved orientation and educational services. In San Mateo County, the National Park Service would work in cooperation with surrounding cities, the county, and Caltrans to encourage a more unifying character to the State Route 1 road corridor, along with a coordinated approach to visitor access and services. This would include transitioning the Shelldance Nursery facilities to visitor support facilities, with improved access to State Route 1, providing a convenient and accessible location for coordinated information services at the entrance to San Mateo County. Further, facility improvements would include the identification and development of recreation portals with trailheads and other visitor support services in Rancho Corral de Tierra, which would better support access to a diversity of recreation opportunities, and help connect visitors with the information and services they need for a visit to this area of the park. These actions would expand visitor opportunities and access to park resources and therefore contribute to a long-term, minor to moderate, beneficial impact to the park visitor.

Most of the existing recreation activities within the park would continue and be better supported through the facilities and access improvements already mentioned. Activities that would be expanded in this alternative include educational and stewardship opportunities at key park sites. These activities would allow the park staff to engage a wider audience and better demonstrate the park's fundamental resources and values, particularly its coastal military defense structures and stories. Connected and improved trails are also proposed in this alternative, along with more multiuse trails. The expansion and enhancement of the park's already extensive trail system would allow for greater opportunities to explore the park. Given the importance of trail opportunities to the public, these improvements would result in a long-term, moderate, beneficial impact. In addition, this alternative provides for an increase in the diversity of overnight opportunities, including primitive camping. These actions would increase the diversity of recreational opportunities and were supported by the public during scoping for this plan. Additional public equestrian programs and expanded equestrian trailhead facilities are proposed in San Mateo County, allowing equestrian uses to expand in the park, which was encouraged by some members of the public. These actions would result in long-term, moderate, beneficial impacts.

Alternative 3 designates a few sensitive resource areas, and accordingly requires limitations on visitor access to those areas. In addition, this alternative proposes changes in the access and regulations for some key visitor use sites including Slide Ranch, Fort Funston, and the southern portion of Ocean Beach. These restrictions and regulations could have long-term, moderate, adverse, impacts on some visitors in terms of visitor opportunities, with the greatest effect on visitors who frequent these areas on a regular basis.

As already noted, this alternative includes proposals for enhanced understanding and exposure to the park's most important resources. In particular, the military history and coastal fortifications at several sites along the coast and bay would be highlighted using the latest technological and multimedia advances and associated programming, giving visitors a deeper understanding of these nationally significant structures. Stewardship centers in the park would enhance community pride and commitment in the park and serve as places to teach the next generation of park stewards, resulting in long-term, moderate, beneficial impacts.

Access and orientation to the park would generally be improved, resulting in a long-term, moderate, beneficial impact. In particular, there would be an increased focus on linking key park sites via multiple modes of transportation, which would help connect a larger audience to park sites, better connect visits between sites, and reduce use conflicts. Trail improvements and connections would be a primary element of this alternative. Trail access improvements allow visitors more convenient and safe access to and between areas within the park as well as surrounding communities and other public lands. Further, this alternative proposes visitor hubs or portals, which would provide centralized orientation and services, improving visitors' ability to access sites throughout the park.

Visitor safety would be better due to several actions in this alternative. If successful in promoting access improvements to park lands in the State Route 1 and Panoramic Highway area, visitors would benefit from better wayfinding, safer overlooks for scenic viewing, and more separation between auto and bicycle use. Other safety improvements include enhancements to multimodal transportation options to ease use conflicts and road congestion during peak times. Finally, increased ranger presence throughout the park, particularly in San Mateo County, would improve response capabilities for park staff. However, the addition of new multiuse trails may cause a small amount of increased conflicts for some visitors. Overall, these safety changes, including access improvements, would provide a long-term, minor, beneficial impact.

Alternative 3 is the NPS preferred alternative for managing the resources and visitors on Alcatraz Island. This alternative would immerse visitors extensively in all of the island's historic periods, providing the best opportunity for visitors to understand and forge a connection with the resources and values of the island. Visitors would have access to restored portions of historic structures that would better tell the story of the various aspects of life on "the Rock." Other special events, classes, and stewardship opportunities focused around the resources and stories of the island's period of significance would also increase the diversity of opportunities available to visitors. Visitors to Alcatraz Island already highly value the interpretive and educational programming of the island's historic resources, and this alternative would expand those opportunities to include more immersive experiences, a setting that is more reflective of the period of significance, and more direct access to the island's historic structures; this would result in a long-term, moderate, beneficial impact. This increase in options would likely appeal to a wider audience of participants and would also likely encourage an increase in repeat visitation.

This alternative proposes additional visitor access restrictions in the waters surrounding the island to replicate the historic no-trespass zone as well as to protect coastal resources and seabird colonies. These regulations would have an adverse impact on some visitors who enjoy navigating the waters in this area (via private boats and harbor tours), and enjoying the close-up views of the island from the water, resulting in long-term, minor, adverse impacts on water-based recreation.

Visitor understanding, education, and interpretation would be greatly enhanced in this alternative, given the higher level of preservation of the buildings, increased access to the structures and surrounding landscapes, and more diverse programming options. In addition, stewardship activities would provide increased visitors understanding and appreciation of the island's natural and cultural resources. Visitor safety would benefit through the preservation of the buildings as well as through increased bird management.

Conclusion. The actions proposed in alternative 3 for Golden Gate National Recreation Area would result in long-term, moderate, beneficial impacts on visitor experience. The most notable beneficial

effect of this alternative would be the increased opportunities for visitors to understand, appreciate, and take part in the preservation of the park's most fundamental resources and values. In addition, this alternative would improve access and connectivity to and between key sites in the park, facilitate the visitor experience, and reduce use conflicts and visitor frustration. However, this alternative would change visitor opportunities at a few existing use areas, leading to long-term, minor to moderate, adverse impacts on visitors who currently frequent these locations for various recreation activities.

Alternative 3 is the NPS preferred alternative for managing Alcatraz Island and would result in long-term, moderate to major, beneficial impacts on visitor experience. This is primarily due to the opportunities to immerse oneself in the historic periods of Alcatraz Island, have access to more of the island's settings and buildings in improved condition, and to participate in stewardship and education activities supported by expanded overnight programs and facilities. The island's history, particularly as related to the military and the federal penitentiary, is of primary interest to most visitors to the island. This alternative would bring the experience alive, illustrating more aspects of life on "the Rock" for a greater diversity of visitors. The number of visitors who could be accommodated on the island may also be slightly increased upon implementation of this alternative given the increased number of opportunities and the ability to better disperse visitors; this would result in long-term, minor to moderate, beneficial impacts on visitor use and experience.

SOCIAL AND ECONOMIC ENVIRONMENT

Introduction

The analysis of impacts on the social and economic environment of the gateway communities and overall Bay Area that surrounds Golden Gate National Recreation Area and Muir Woods National Monument is based on topic research and professional judgment of planners who have experience with similar plans. To help identify the impacts of the various alternatives, the social and economic environment is described by three primary contributing factors: quality of life, population demographics, and local economy. These three factors reflect the three main areas of discussion in the "Social and Economic Affected Environment" section. The impact analyses in this section primarily focus on the quality of life and local economy topics because the park management actions in the various alternatives may affect these attributes of the social and economic environment. Also, in terms of geographic scope, the impact analyses in this section primarily focus on the social and economic conditions of the local gateway communities around the park and monument and the three adjacent counties of Marin, San Francisco, and San Mateo because this is where the majority of impacts would be noticeable.

In the discussion of impacts on the social and economic environment, an analysis section and conclusion section are included for each alternative for Golden Gate National Recreation Area, including Alcatraz Island. The impacts from actions associated with the Muir Woods National Monument are discussed later in this section.

No-action Alternative

Analysis. By continuing to provide and potentially expanding open space preservation, outdoor recreation opportunities, natural and cultural resource preservation, interpretation, education, and stewardship opportunities the park would continue to strengthen its contribution to the Bay Area's high quality of life. As detailed in the "Social and Economic Affected Environment" section, public access to parklands is integral in sustaining a high quality of life in a highly urbanized region such as the Bay Area. The Golden Gate

National Recreation Area's location at an urban-wildland interface make it particularly important for physiological health (i.e., from exercise), psychological health, community-building, community identity, and landscape aesthetics (e.g., open space backdrop to a densely populated urban area). Under the no-action alternative, the National Park Service would continue working cooperatively with other neighboring local governments and land managers to further enhance the area's quality of life by preserving a vast network of open lands in the Bay Area. In addition, with a few exceptions, existing education and stewardship opportunities for the residents would be maintained at the park, and possibly improved as financial and staffing resources become available. As other private land continues to be developed and urbanized into the future, Golden Gate National Recreation Area will become exponentially more valuable to the community and the quality of life of the residents. Its preservation would result in an impact that is long-term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In a general sense, the park's overall intrinsic contribution to the local economy of the gateway counties and the Bay Area would be maintained and/or enhanced by the no-action alternative. By continuing to provide open space preservation, numerous recreation opportunities, facilities, and park settings for organized group activities, the park would continue to help make the Bay Area a place for companies and talented professionals to call home. In other words, the Bay Area's quality of life becomes a draw for business and economic growth with help from places like Golden Gate National Recreation Area. The no-action alternative will sustain and enhance this economic value to the Bay Area. The economic growth and success of Silicon Valley is a prime example of how economic growth relates to a quality business location and natural landscape backdrop. This results in an impact that would be long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In terms of direct effects on the local economy, the no-action alternative would generally maintain the current levels of NPS jobs; concession operations; NPS operations spending and contract work; and park partner activities. There would be occasional site-specific or program-specific improvements. The value of these attributes to the local economy is discussed in the "Social and Economic Environment" section of part 8. The overall value of the park's contribution to the local economy would continue to have substantial positive effects on the local economy in the gateway communities and three adjacent counties. In addition, Alcatraz Island remains a major attraction that directly contributes to the tourism industry through increased length of stay in local accommodations, business opportunities related to the Alcatraz Island theme, bay tours, and other guided commercial opportunities. These commercial activities contribute to sustaining employment within the tourism industry. The continuation of the current management direction would have a long-term, minor to moderate beneficial impact on the gateway communities and adjacent three counties.

Conclusion. The overall impact to the social and economic environment from the no-action alternative could be long term, minor to moderate, and beneficial for the local gateway communities and the three adjacent counties. The beneficial impacts would result from maintaining the park's contribution to the local economy and quality of life, existing education and stewardship programs, as well as maintaining existing relationships with other local governments and land managers.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Alternative 1 would maintain the inherent quality of life and economic values of Golden Gate National Recreation Area, as noted in the analysis for the no-action alternative. It would continue to provide open space preservation, outdoor recreation opportunities, natural and cultural resource preservation, as well as education and stewardship opportunities. The park's location at an urban-wildland interface make it particularly important for physiological health, psychological health, community-building, community identity, and landscape aesthetics, which all contribute to quality of life in a highly urbanized region. This value will only increase as more private land in the region develops in the future. As in the no-action alternative, its continued preservation would result in an impact to quality of life that is long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties. Also, alternative 1 would maintain the park's overall intrinsic contribution to the local economy, as mentioned in the no-action alternative analysis. Given its significant contribution to quality of life at the urban-wildland interface of a large urban area, the park would continue to help attract businesses and talented professionals to the Bay Area. This results in an impact that would be long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In addition to continuing these attributes of the no-action alternative, alternative 1 would guide park staff to make stronger efforts at reaching out to the diverse populations of the Bay Area and welcoming them to Golden Gate National Recreation Area. Actions would include community outreach programs, adding group facilities, new park programs, and establishing new welcome/orientation facilities in key locations in the park. These outreach and welcoming efforts would include collaborative community building and would help foster a new relationship with Bay Area residents. A community that develops a strong relationship with its parks can contribute to quality of life of its residents. Under alternative 1, new and/or improved welcoming and orientation centers, some in collaboration with local communities, would be provided at multiple locations. New and varied interpretive, educational, and stewardship programs would evolve to better connect diverse communities with the park's resources. These facility and program enhancements under alternative 1 would provide new opportunities for many school groups and residents throughout the Bay Area. Under alternative 1, the National Park Service would also work closely with local communities to improve accessibility to the park sites by improving the public transit network and connecting the park and communities with numerous trails. Collectively, these actions would contribute to the quality of life for Bay Area residents. This could result in an impact that is long term, minor to moderate, and beneficial to the local gateway communities and three adjacent counties.

Alternative 1 would support the continuation of existing equestrian facilities in the park. Some minor expansions may also take place at the facility in Tennessee Valley, while the existing equestrian facilities at Picardo Ranch and Rancho Corral de Tierra in San Mateo County will be maintained and enhanced with more programming under alternative 1. These facilities are important recreational assets to many members of the surrounding communities and contribute to the quality of life of these residents. Sustaining and/or expanding these equestrian facilities could yield impacts that are long term, minor to moderate and beneficial for the local gateway communities and the three adjacent counties.

Alternative 1 includes a variety of actions that would help foster or improve relationships

between the National Park Service and local communities, park partners, and other adjacent land management agencies. These actions would include community outreach and education programs that help introduce the community to the national park system. Alternative 1 places an emphasis on preserving and enhancing opportunities for local community residents to experience nature, learn local history, and enjoy open lands with other community residents. By providing opportunities and a venue for community interaction, this would enhance the quality of life for residents of the gateway counties. This alternative would also emphasize building community connections by collaborating with local governments, park partners, and other local land managers via multiagency projects. Community-building efforts such as these could result in impacts that are long term, moderate, and beneficial for local gateway communities. Impacts on the three adjacent counties could be long term, minor to moderate, and beneficial.

A key component of alternative 1 is providing new and upgraded visitor facilities that would complement the park staff's efforts at welcoming and orienting people to the park. Given this priority, alternative 1 would include many new and expanded facilities throughout the park in all three gateway counties. The projects would include the construction, relocation, redevelopment, and/or restoration of visitor centers, historic structures, restrooms, showers, picnic areas, parking lots, warming huts, interpretive exhibits, roadway viewpoints, campsites, trailheads, and other modest overnight accommodations. Alcatraz Island would also have numerous historic structure restoration projects. Many of these projects would generate new work for local and regional companies in the Bay Area, including engineering consultants, construction contractors, and environmental consultants. These projects would not only support these businesses and their employees directly, but the economic multiplier effect would circulate this contract money through the local economy. The collective result of these actions would be an economic contribution that is short term, minor to moderate, and beneficial for local gateway communities and three adjacent counties.

In addition to the economic contributions as described in the no-action alternative, alternative 1 would also create new and expanded economic opportunities for some park partners and local organizations by providing expanded visitor programs, amenities, and facilities that could help grow these organizations and partners. This could empower or leverage partners to provide more educational, stewardship programming, and visitor service opportunities. These types of collaborations with park partners and other local agencies would result in an economic impact that is long term, minor to moderate, and beneficial for local gateway communities and the three adjacent counties.

Lastly, to meet the "Connecting People with the Parks" objective of alternative 1, several park facilities and amenities would be upgraded to provide more guest services to better-accommodate the visitors (e.g., visitor orientation, food services, meeting/program space, rustic cabins, hostels, camping, and special event or conference hosting). These new or expanded services could generate additional employment for park partners, concessions, and local businesses. In addition, the local economy would benefit from the various equestrian facilities being retained under alternative 1, as the equestrian facilities generate jobs and other local business. The visitor service improvements, and associated jobs, under alternative 1 would occur at several sites throughout all three gateway counties. The creation of jobs is important for economic growth, as it provides sustained direct and secondary spending (i.e., economic multiplier effect) in local spending in the community. Thus, these proposed visitor services in alternative 1 would have an impact that is long term, minor, and beneficial in the context of the local gateway communities and three adjacent counties.

Conclusion. The short-term and long-term beneficial impacts of alternative 1 on the social and economic environment of the local gateway communities and the three adjacent counties could range from minor to moderate. These beneficial impacts on quality of life and local economy could result from

- a considerable increase in public outreach programs, visitor orientation, and educational or stewardship opportunities;
- substantial improvements in public accessibility, transportation options, and community trail connections;
- sustaining and/or enhancing the existing equestrian facilities;
- incorporating several community-building components;
- economic growth via many new engineering and construction contract work for numerous facility improvement projects throughout the three gateway counties;
- several new opportunities for park partners to use park facilities and expand their operations; or
- a substantial amount of job creation from the proposed increase in visitor services throughout the park.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Alternative 2 would maintain the inherent quality of life and economic values of Golden Gate National Recreation Area, as noted in the analysis for the no-action alternative. It would continue to provide open space preservation, outdoor recreation opportunities, natural and cultural resource preservation, as well as education and stewardship opportunities. The park's location at an urban-wildland interface make it particularly important for physiological health, psychological health, community-building, community identity, and landscape aesthetics, which all contribute to quality of life in a highly urbanized region. This value will only increase as more private land in the region develops in the future. As in the no-action alternative, its continued preservation would result in an impact to quality of life that is long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties. Also, alternative 2 would maintain the park's overall intrinsic contribution to the local economy, as mentioned in the no-action alternative analysis. Given its substantial contribution to quality of life at the urban-wildland interface of a large urban area, the park would continue to help attract businesses and talented professionals to the Bay Area. This results in an impact that would be long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In addition to continuing these attributes of the no-action alternative, alternative 2 would emphasize a new priority of "preserving and enjoying coastal ecosystems." The park's goals would focus on educating the public on the importance of the natural resources throughout the Bay Area coastal environment and the importance of being good stewards to these unique resources. Under alternative 2, the National Park Service would increase educational and stewardship opportunities for local residents and school groups in the three gateway counties by improving facilities and enhancing education and stewardship programs at several park sites throughout the region. Raising the level of community awareness of ecological issues and active stewardship can improve the quality of life for local residents by getting them more concerned and "invested" in the park and its unique resources, which could yield a stronger sense of community value and healthy living. In turn, the open lands and unique resources would stand a better chance at being preserved into the future if the community residents become more aware and active in stewardship. In other words, by helping to preserve the resources, the residents are, in effect, also helping to

preserve the qualities that make living in the Bay Area wonderful (because much of the quality of life relies on open, preserved lands and resources). Alternative 2 would also enhance community connectivity by guiding the National Park Service to work with local communities and land managers to pursue improved trail accessibility and public transit to some park sites. Providing more access opportunities would allow local residents to access more park programs and amenities, as well as open areas for exercise and community gathering. Collectively, these actions would contribute to the quality of life for area residents, resulting in long-term, minor to moderate, and beneficial impacts for the local gateway communities and the three adjacent counties.

However, under alternative 2, converting Montara Lighthouse from a hostel to a facility dedicated to education and stewardship would have a long-term, minor, adverse impact to the hostel facility operation and its users. While the equestrian facilities in Marin County would be more or less maintained in their current state, the four equestrian facilities at Rancho Corral de Tierra in San Mateo County could be removed and/or relocated in an effort to protect resources near the streams. Similarly, the environmental and farm education centers at Slide Ranch would be relocated to a more sustainable and geologically stable area. Although the education programs would be continued in the new location, the value of the facility to local residents and school children may be negatively affected due to the location change, especially if relocated away from the Pacific Ocean. These facilities are important assets to many members of the surrounding communities and contribute to their quality of life. Therefore, if these opportunities are removed, a long-term, minor to moderate, and adverse impact could result in the context of the local gateway communities and three adjacent counties.

Alternative 2 includes several actions that would help the National Park Service develop relationships with local communities and local land management agencies of the Bay Area. Many of these actions are focused on cooperating with other land managers to jointly solve and address long-term natural resource issues. Other actions are aimed at creating relationships with gateway county communities to establish a network of natural resource stewardship programs in the park. Thus, these actions are in line with dual emphasis in alternative 2 of protecting ecological resources and educating the community on these resources (and how to be good stewards). In addition, when a diverse population of residents and agencies work together toward a common goal, such as climate change awareness, coastal preservation, or land stewardship, an evolving sense of environmental ethic and community livability develops. This further contributes to the community's quality of life. Actions like these can result in impacts that are long term, moderate, and beneficial for local gateway communities. Impacts on the three adjacent counties could be long term, minor to moderate, and beneficial.

Under alternative 2, several natural resources restoration projects would contribute to the local economy in the three gateway counties, and possibly beyond. The projects would include restoration of habitats, stream corridors, marine ecosystems, and removal of invasive species over large areas of the park. In addition, alternative 2 would improve some park facilities and infrastructure in order to continue these visitor services while working to minimize impacts on the natural resources of the park. Many of these projects would generate new work for local and regional companies in the Bay Area, including engineering consultants, construction contractors, and environmental consultants. These projects would not only support these businesses and their employees directly, but the economic multiplier effect would circulate this contract money through the local economy. These actions could result in impacts that are short term, minor, and beneficial for local gateway communities and three adjacent counties.

Alternative 2 would have some beneficial impacts on the park partners and other community organizations in the area. The most notable new impacts on park partners under alternative 2 would be at Alcatraz Island and in the City and County of San Francisco. Such collaborations between the park and partners would increase opportunities for the partners to grow their programs and organizations. This would also strengthen working relationships with the communities and raise community awareness of climate change and coastal preservation. These actions could result in impacts that are long term, minor, and beneficial for local gateway communities and three adjacent counties.

However, the removal of the facilities at Slide Ranch would have negative economic effects on the park partner that currently manages Slide Ranch. Also, alternative 2 would include the removal of work force housing units at Capehart housing area in Marin County to allow ecological restoration. This would affect park partners who use these facilities. These two impacts on the local economy would be long term, minor and adverse in the context of the local gateway communities. Impacts on the three adjacent counties would be negligible.

Alternative 2 includes a proposal that, in event of catastrophic coastal landslide on U.S. State Route 1 (south of Stinson Beach) in Marin County, the National Park Service would recommend to Caltrans that it abandon this segment of road. However, because the highway is not under the jurisdiction of the National Park Service, the decision and environmental analysis regarding any State Route 1 reroute or segment closure would be administered by Caltrans. If this would occur, the closure of this segment of State Route 1 would alter the transportation system for local communities (and regionally for Caltrans), which would be inconvenient to local residents. This closure could have an impact that is long term, moderate, and adverse to the local gateway communities. Impacts on the three adjacent counties could be long term, minor, and adverse.

On Alcatraz Island, alternative 2 would include visitor orientation, some food services, office/classroom space, day use programming facilities, and hostel accommodations for visitors and volunteer stewards. These new and expanded services could generate additional jobs for NPS employees and/or private concessioners and result in long-term, minor, beneficial impacts on the local gateway communities and negligible impacts on the three adjacent counties.

Overall, this alternative does not appreciably add new levels of visitor services and facilities, and emphasizes a more primitive visitor experience. These actions would result in negligible increase in park-related employment opportunities. Therefore, alternative 2 could have a minimal added contribution to the local economy resulting in long-term, minor, beneficial impact to the gateway communities and negligible impacts on the three counties adjacent counties.

Conclusion. In summary, the short-term and long-term beneficial impacts of alternative 2 on the local gateway communities and the three adjacent counties would range from minor to moderate. Collectively, the beneficial impacts on quality of life and local economy could result from

- some site-specific increase in public outreach programs and visitor orientation,
- a considerable increase in educational and stewardship opportunities,
- some additional community trail connections,
- National Park Service collaborations with several other community governments and land management agencies,
- some new engineering and construction contract work for

several restoration projects throughout the three gateway counties,

- a limited number of new park partner opportunities, or
- a limited amount of job creation from the proposed increase in visitor services throughout the park.

The long-term adverse impacts on the social and economic conditions of the local gateway communities and three adjacent counties could range from minor to moderate. The adverse impacts from alternative 2 could result from (1) a possible reduction in NPS and concession jobs at certain park sites due to area closures and some facility removal, (2) a possible reduction in opportunities for a limited number of park partners, (3) the recommended closure of a segment of State Route 1 (though Caltrans has jurisdiction and decision authority), and (4) removing or relocating equestrian facilities (at Rancho Corral de Tierra) and an environmental and farm education facility (at Slide Ranch).

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. Alternative 3 would maintain the inherent quality of life and economic values of Golden Gate National Recreation Area, as noted in the analysis for the no-action alternative. It would continue to provide open space preservation, outdoor recreation opportunities, natural and cultural resource preservation, as well as education and stewardship opportunities. The park's location at an urban-wildland interface make it particularly important for physiological health, psychological health, community-building, community identity, and landscape aesthetics, which all contribute to quality of life in a highly urbanized region. This value will only increase as more private land in the region develops in the future. As in the no-action alternative, its continued preservation would result in an impact to quality of life that is long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties. Also, alternative 3 would maintain the park's overall intrinsic contribution to the local economy, as mentioned in the no-action alternative analysis. Given its substantial contribution to quality of life at the urban-wildland interface of a large urban area, the park would continue to help attract businesses and talented professionals to the Bay Area. This results in an impact that would be long term, moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In addition to continuing these attributes of the no-action alternative, alternative 3 would guide the expansion and/or enhancement of several park site facilities and services in a way that offers improved information and orientation to the National Park Service and to Golden Gate National Recreation Area. By providing improved orientation services, new visitor welcoming centers, and an understanding of park-related opportunities to the diverse populations via new facilities and programs, the National Park Service could improve the quality of life for many residents of the area. In addition, compared to the no-action alternative, alternative 3 includes a substantial increase in educational and stewardship opportunities for local residents and school groups at several park sites. This alternative focuses on education and stewardship of both ecological education and historic and cultural sites. By offering local residents education about the ecological and historic significance and national uniqueness of the many sites around them, the National Park Service could generate community interest in resource stewardship of these sites, as well as provide the residents with a comprehensive understanding of Bay Area history. Also, under alternative 3, the National Park Service would improve a parkwide expansion of trail connections to adjacent community parks and trail networks by collaborating with many local governments. These trail connections should provide community residents with several

additional ways to access Golden Gate National Recreation Area park sites to benefit from park programs and amenities. Collectively, these facility enhancements and program improvements could improve the quality of life for local residents. This would result in an impact that is long term, minor to moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

Also, all existing equestrian facilities in the park would be maintained and enhanced with additional programming. These equestrian facilities San Mateo and Marin counties would continue to be important assets to many residents of the surrounding communities by contributing to their quality of life. The maintenance or enhancement of the existing equestrian facilities could yield impacts that are long term, minor, and beneficial for the local gateway communities and the three adjacent counties.

Alternative 3 includes several actions that would help the National Park Service develop relationships with local communities and local land management agencies of the Bay Area. The aim of these cooperative efforts would be to educate the Bay Area community on the national significance and uniqueness of the significant park sites (both in the park and on other public lands in the area). This heightened public awareness of the history and national significance of the many park sites in all three gateway counties would likely generate a sense of community pride throughout the area. The cooperative efforts would also attempt to inform the local residents on how the "quilt" of undeveloped land has been preserved by the National Park Service, various land trusts, several local governments, and individuals. Understanding and awareness of a resource can lead to community appreciation, awareness, and pride. These community values can contribute to the quality of life in the area. These community-building actions could result in impacts that are long term, moderate, and beneficial for local gateway communities. Impacts on the three adjacent counties could be long term, minor to moderate, and beneficial.

In terms of impacts on the local economy, alternative 3 would include major construction and restoration projects at park sites in all three gateway counties. The projects under alternative 3 would include the construction, relocation, redevelopment, and/or restoration of visitor centers, a stewardship/education center, several historic structures, restrooms, showers, picnic areas, parking lots, warming huts, interpretive exhibits, roadway turn-offs, rustic overnight accommodations, and natural landscapes. Many of these projects would generate new contract work for private firms in the Bay Area, including engineering consultants, construction contractors, and environmental consultants. These projects would not only support these contracting businesses and their employees directly, but the economic multiplier effect would circulate this contract money through the local economy. This phenomenon is explained in the "Social and Economic Affected Environment" section. The collective result of these contracted projects would be impacts that are short term, minor to moderate, and beneficial for local gateway communities and three adjacent counties.

The proposed expansion of facilities and services at Alcatraz Island and other historic park sites provide examples of park partners benefitting from NPS programming. Alternative 3 would provide expanded visitor programs, amenities, and facilities that could help grow these organizations and partners. This could empower or leverage partners to provide more educational, stewardship programming, and visitor service opportunities. This collaboration with park partners and other local organizations and agencies would result in impacts that are long term, minor to moderate, and beneficial for local gateway communities and the three adjacent counties.

Alternative 3 would include the removal of some work force housing units at Capehart

housing area in Marin County. These units would be replaced with a new visitor center. This could affect park partners who benefit from this housing unless it is provided elsewhere. This could result in an impact that is long term, minor, and adverse in the context of local gateway communities. Impacts on the three adjacent counties would be negligible.

To fulfill the "Focusing on National Treasures" objective of alternative 3, park facilities and amenities would be restored and new park programs developed. These new or expanded services could generate additional jobs for NPS employees and/or private concessioners. These improved services would include: a new ferry service (Fort Mason to Alcatraz Island), improved visitor orientation and additional park programs, facilities and services and special event hosting. The creation of jobs is important for economic growth, as it provides sustained direct and secondary spending (i.e., multiplier effect) in local spending in the community. Thus, these proposed service expansion actions in alternative 3 would have an impact that is long term, minor, and beneficial in the context of the local gateway communities. The impact in the context of the three adjacent counties would be negligible.

However, a possible negative impact to tour boat operators may occur with alternative 3. Although the visitor ferry access will be accommodated along the eastern shoreline, the historic no trespass zone around the island will place limitations on tour boat operators that currently use the area. It is reasonable to expect that boat operators would continue to circle Alcatraz Island as part of the bay cruise, staying farther away from the shore. This impact would be long term, negligible, and adverse to the local gateway.

Conclusion. The short-term and long-term beneficial impacts of alternative 3 on the social and economic environment of the local gateway communities and three adjacent counties could range from minor to moderate. The beneficial impacts on qualify of life and economy could result from

- an increase in public outreach programs, visitor orientation, educational/stewardship opportunities and additional park programs,
- improvements in public accessibility and community trail connections,
- sustaining and/or enhancing existing equestrian facilities,
- incorporating several community-building components,
- a moderate amount of new engineering and construction contract work for numerous facility improvement and restoration projects,
- limited new opportunities for park partners to use park facilities and expand their operation, or
- a small amount of job creation from the proposed increase in visitor services at various park sites.

The adverse impacts could result from removal of work force housing units at Capehart housing area and possible restrictions on tour boat operators with implementing the historic no trespass zone around the Alcatraz Island. These impacts would be long term, minor, and adverse to the local gateway communities.

TRANSPORTATION

This section describes the potential impacts on transportation at Golden Gate National Recreation Area park sites, including Alcatraz Island. The impacts are described for the counties of Marin, San Francisco, and San Mateo counties, and for Alcatraz Island.

No-action Alternative

Analysis.

Marin County—

In general, park areas in Marin have good pedestrian access, with some transit access to the Marin Headlands from San Francisco, and transit to other park sites via the West Marin Stagecoach and the Muir Woods Shuttle. Traffic congestion is a current and worsening problem in specific areas as noted below. In many cases traffic congestion is related to the rural roadway system with limited options and limited capacity. In rural Marin County, roadway capacity is unlikely to increase substantially.

In the southeast coastal area (Rodeo Valley/ McCullough and Conzelman Road), existing planned road, trail, and transit projects are likely to improve access for visitors from all parts of the Bay Area as well as for park partners and reduce congestion at scenic overlooks. This area is served by transit on Sundays by Muni bus service from San Francisco, with plans to expand service to Saturdays when funding is available. Traffic congestion would continue to be problematic during peak periods on roads connecting the Golden Gate Bridge with the Marin Headlands.

Along the southwest coast, (Muir Beach to Point Bonita), small roads serving Tennessee Valley, Muir Beach, and Muir Woods National Monument experience traffic congestion ranging from moderate on warm weekends to severe during peak periods. Neither Tennessee Valley nor Muir Beach is served by transit.

For a recent report, *Transportation Planning to Address Access and Congestion Issues – Muir Woods National Monument,* HDR, Inc., collected detailed data on seven weekday and weekend days from August 7 through August 16, 2009, along State Route 1 between Highway 101 and Muir Woods. Intersections experiencing levels of service E or F on weekends were Muir Woods Road at Panoramic Highway, State Route 1 at Panoramic Highway, State Route 1 at Tennessee Valley Road, State Route 1 at Pohono Street, and State Route 1 at Flamingo Road (unsignalized). The last three of these intersections saw levels of service of E or F on weekdays as well.

In the Stinson area, access to Stinson Beach along State Route 1 and the Panoramic Highway is congested on good weather weekends, approaching gridlock at times on summer weekends. Stinson Beach is served by the West Marin Stagecoach.

The absence of measures improve transportation access to park sites in Marin (beyond those already planned) would have a long-term, minor to moderate adverse impact. While projects described in the cumulative impacts section would help mitigate transportation shortcomings in the Marin Headlands, other areas such as Muir Beach, Muir Woods National Monument, and Stinson Beach would all continue to experience long-term, moderate, adverse impacts on accessibility to visitors during peak periods.

San Francisco—

San Francisco park areas are well served by transit and well-connected with bicycle and pedestrian paths. Exceptions to this are Lands End, Sutro Heights, and Fort Miley, which are not well served by transit. Aside from any actions taken by the park, transit to the Fort Mason area is likely to be improved with the development of the Van Ness Bus Rapid Transit System, and further enhanced with the proposed extension of the streetcar along the northern waterfront. Either of these measures would provide a long-term, moderate to major, beneficial impact in connectivity and availability of public transit to Fort Mason, Crissy Field, and the Presidio. In addition, implementation of the *Northern Embarcadero Waterfront Plan*, which calls for bicycle lanes along Jefferson Street, would enhance transportation to Fort Mason.

Independent of these external projects, the absence of further transportation measures would have a negligible impact on access to park lands in San Francisco.

San Mateo County—

Under the no-action alternative, access to park lands in San Mateo County would continue to be less accessible by all modes of transportation because of unimproved trailheads, limited parking, minimal signage, and very limited transit access. Visitation would continue to increase without additional transportation improvements to direct and accommodate new visitors, or to promote or provide no auto access options. Informal or "social" trails would continue to be a significant way to enter parklands from adjacent neighborhoods; such trails, created by visitors, can lead to deterioration of natural resources. Accessibility for people with disabilities would continue to be limited. Auto access would improve in 2011 when the Devil's Slide tunnels are opened. San Mateo County is required to install bus stops at the north and south turnouts near the tunnels; thus transit options in this particular area will improve as well. Taking no further transportation improvement actions in San Mateo County would have a long-term, minor to moderate, adverse effect on access to these park sites, limiting access for many potential visitors.

Alcatraz Island–

In the no-action alternative, transportation to and within Alcatraz Island is limited to concession-operated water transport only; visitors board the ferry at Pier 33 on San Francisco's Embarcadero, and leave the ferry at the Alcatraz arrival area. Ferry access would remain limited to the concessioner from Pier 33. Private boats cannot land on the island, although tour boats can come within the 1,000-foot perimeter that defines the area managed by the National Park Service.

Conclusion. In Marin County, auto access to the most popular destinations is likely to continue to be difficult during peak periods, while bicycle and pedestrian access would improve, particularly in the Marin Headlands, because of projects outside this planning process. Existing transit service would continue to enable access to park lands in Marin County for visitors without cars. The no-action alternative would have a long-term, minor to moderate to major, adverse impact on the access to most popular sites, and a long-term, minor, adverse effect on transportation in other areas, such as the Marin Headlands.

Park sites in San Francisco County in the north part of the city would see long-term, moderate, beneficial impact to access by land via improved transit implemented by the San Francisco Municipal Transportation Agency.

Park lands in San Mateo County would see a long-term minor improvement in access by land because of the Devil's Slide project and accompanying transit stops. Taking no other transportation improvement actions in San Mateo would have a long-term, minor to moderate, adverse effect on access to these park sites.

The no-action alternative would have negligible impacts on transportation to or within Alcatraz Island.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. Alternative 1 proposes to improve and expand connectivity and access to the park and monument through new and improved transit (land or water), bicycle, and pedestrian access to and within the park.

Marin County—

In addition to the actions common to all alternatives, transportation-related measures in alternative 1 would improve public

transportation and multimodal access to all park sites in Marin County. Trails would be improved in all areas, increasing access and connectivity to sites.

In the southeast coastal area (Rodeo Valley / McCullough and Conzelman Road), safe pedestrian, bicycle, and motor vehicle access to overlooks and to interpretive and recreational opportunities would be provided. This would have a long-term, moderate, beneficial impact for visitors to this area. In the southwest coast area (Muir Beach to Point Bonita) a trailhead and transit stop would be added to the Golden Gate Dairy. The National Park Service would continue to work with Caltrans to improve the safety of State Route 1, including exploring regularly scheduled transit. Increased transit access would have a long-term, minor, beneficial impact for visitors in this area. Trails in the Lower Redwood Creek area would be improved to connect Muir Woods Road to the equestrian facilities at Santos Meadow. This may have a long-term, negligible effect on connections for visitors to this area.

The diverse opportunities zone in Rodeo Valley could include visitor amenities such as improved trailheads and accessible trails, as well as camping, picnicking, and orientation. These facilities would welcome visitors and give access to the adjacent natural areas. Improved and accessible trails would provide a long-term, minor, beneficial effect on circulation in this area. Housing for staff, interns and volunteers would be provided within and adjacent to this management zone. A transit stop would be added at Fort Barry. Increased transit access would have a long-term, minor, beneficial impact for park and park partner's employees as well as visitors in this area.

The National Park Service would collaborate with other agencies to develop a community trailhead in Marin City. This would have a long-term, moderate, beneficial effect for hikers accessing the Marin Headlands from Marin City.

In Tennessee Valley, in collaboration with Marin County and the local community, park managers would explore transit to the trailheads on peak season weekends, extend a multiuse trail to connect with the Mill Valley Bike Path (and the San Francisco Bay Trail), and manage traffic congestion. This may enable more people to visit on peak weekends, because currently, some visitors are unable to find parking, and leave without visiting the valley. These measures would have a long-term, moderate, beneficial impact for Tennessee Valley, affecting most visitors by reducing traffic congestion on peak weekends and providing other ways to access this popular location besides driving.

Some additional parking would be added at the trailhead in Oakwood Valley. This would have a long-term, minor, beneficial impact in reducing crowded parking conditions on Tennessee Valley Road.

At Stinson Beach and along the State Route 1 / Panoramic park, the park staff would collaborate with Caltrans, Marin County, and other land management agencies to improve roadways and trail crossings for the safety and enjoyment of park visitors. New facilities could include overlooks and trailheads with parking, enhanced trail and transit connections, and a unified wayfinding system. A small trailhead parking area could be developed in the vicinity of the former White Gate Ranch. These transportation improvements would have a long-term, minor to moderate, beneficial impact on access by land, parking availability, and improved public safety. Improvements east of Panoramic Highway in the vicinity of Homestead Hill would enhance trail and transit access in this area. Improvements would fit with the rural character of the area. Increased trail and transit access would have a long-term, minor, beneficial impact in this area. Park management would continue to seek increased transit to the Beach on peak-season weekends. Increased transit access would have a long-term, moderate, beneficial impact for visitors in this area.

San Francisco—

In addition to the actions common to all alternatives, alternative 1 provides greater connectivity to San Francisco parks through improved transit, trails, and signage. This alternative anticipates development of a water shuttle system connecting bay front parks.

The park would continue to improve trails and trailheads throughout its San Francisco park lands to make the park accessible to the broadest array of visitors. Sites would be connected to each other and to communities by the trail system and the city's transit and multimodal access systems. These projects would have a long-term, minor to moderate, beneficial effect on visitor connections.

Visitor circulation and wayfinding improvements would be implemented in response to new adjacent bus, streetcar and ferry connections. These projects would have a long-term, minor, beneficial effect on visitor connections.

The park would improve the California Coastal Trail and other trail connections linking Ocean Beach to Lands End, Fort Funston, city neighborhoods, and other park lands including Golden Gate Park and Lake Merced. This would have a long-term, minor to moderate, beneficial effect on connectivity between the park and neighborhoods for southwest San Francisco park sites.

San Mateo County—

In addition to the actions common to all alternatives, alternative 1 attempts to mitigate the remoteness and lack of access to the San Mateo park lands by focusing on providing more trail access to and between all park areas, as well as increasing parking and improving transit connections. A comprehensive trail plan would be prepared to create a sustainable regional trail network, providing greater opportunities to access park sites and connect with local communities. The California Coastal Trail is already built on Mori Point, allowing increased access north and south; it is partially built across the Pedro Point Headlands (Point San Pedro). Once the property is acquired and the trail is completed, it will substantially increase access to these areas.

Park managers would work with county transit providers to improve transit connections to local trailheads and east-west transit between bayside communities and State Route 1. In cooperation with Caltrans and at the request of the town of Pacifica, signs along State Route 1 would be improved to make the park and monument more visible. The considerable increase in trail and transit access is likely to have a long-term, moderate, beneficial impact on all park lands in San Mateo County.

Connections to the regional trail network at the Shelldance Nursery and the surrounding public lands (SFPUC, San Pedro Valley County Park, McNee Ranch State Park, and Rancho Corral de Tierra) would be developed in coordination with other land managers. Additional connections to the Bay Area Ridge Trail and the Sawyer Camp Trail in the SFPUC watershed would be enhanced. These projects would have a long-term, minor to moderate, beneficial effect on connecting Golden Gate National Recreation Area sites in San Mateo County to other local and state park sites, regional trails, and surrounding communities. Limited vehicular access to the San Francisco Bay Discovery Site National Historical Landmark would be available by permit. Together, these actions would have a long-term, minor, beneficial impact for visitors accessing these park lands.

Access to Mori Point would be enhanced with an ADA-accessible trailhead and parking improvements, providing a long-term, moderate, beneficial impact.

Visitors would access the coastal areas through an enhanced and sustainable system of multiuse trails. The trail network would connect local communities to the park and

link the ridges of Montara Mountain to the Pacific Ocean. Opportunities for a trail connection to Sweeney Ridge through the SFPUC watershed's northwest corner would be explored. Unnecessary management roads could be converted to trails or removed. These projects would have a long-term, moderate, beneficial impact on visitor access, connecting the coastal areas to each other and to surrounding communities.

Alcatraz Island—

Alternative 1 includes the following transportation-related actions for Alcatraz. Some indoor and outdoor areas on Alcatraz Island that are currently inaccessible would be reopened, while sensitive wildlife areas would remain protected. Parts of the perimeter trail would be made accessible year-round. This action would have a long-term, minor, beneficial impact on making currently inaccessible areas available to the public. The National Park Service would prohibit boat tours and small boat landing in the sensitive resources management zone (extending 100 feet from the island's western shore). This action would have a long-term, minor, adverse effect on water access to this side of the island. The scenic corridor zone (extending beyond the sensitive resources zone and along the island's eastern shore) would be managed to accommodate ferry service to the island. Boat tours around the island and some types of water-based recreation, such as fishing, could be permitted. These actions would have a long-term, minor, beneficial effect on access to the island.

The area adjacent to the entry dock would be managed to expand the capacity and range of uses that may occur. This would enable Alcatraz Island to be part of the San Francisco Bay Water Trail, welcoming nonmotorized boats via permits or reservations. This would have a long-term, minor, beneficial effect on access to the island for those arriving in private nonmotorized boats.

Conclusion. In alternative 1, access by land to park sites in Marin County, including improved trails, increased transit services, and wayfinding, would see a long-term, moderate, beneficial effect, particularly during peak and shoulder seasons, and on holiday weekends throughout the year. Increased transit service and stops would have a moderately beneficial impact on both the functionality of the land-based transportation system and on connectivity. It would not only provide more ways for people to get to the park sites, but would also relieve congestion on the roads for both transit and motorists.

In San Francisco County, alternative 1 would have a long-term, moderate, beneficial impact on both visitor connections and the functioning of the transportation system through increased land and water transit and improved trails.

In San Mateo County, enhanced trail systems would provide a long-term, moderate to major, beneficial effect on connections by land; there would be a long-term, moderate, beneficial effect on transportation functionality through more transit availability and a minor beneficial impact on parking.

At Alcatraz Island, the slight increase in boat and ferry traffic in the scenic corridor zone as well as the entry dock area could result in a long-term, minor, beneficial impact by increasing access by water to the island. Reopening improved areas of the park and increasing currently limited trail access to year-round access would have a long-term, minor, beneficial impact on pedestrian access to park features and circulation on the island.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Alternative 2 focuses on preserving the natural resources of the park and monument by carefully controlling access and removing deteriorated or unused human-made structures, and has the least impacts on transportation.

Marin County—

In addition to the measures under "Actions Common to all Alternatives," previously described, there are few actions in alternative 2 that would substantially improve or detract from visitor access and connectivity. Little-used roads would be converted to trails. The main Tennessee Valley Trail, which is currently open to hikers and equestrians, would be converted to a multiuse trail, opening the trail to bicycles as well. These actions would provide a long-term, negligible to minor, beneficial impact in access and in modes of travel.

Alternative 2 recommends that the South parking lot at Stinson Beach be removed and the wetland restored. Because this lot comprises about 50% of the parking spaces at Stinson Beach, removing the south parking lot would have to be carefully coordinated with the town of Stinson Beach, the County of Marin, and Marin Transit in order to prevent major adverse effects on the local community. Data from the *Comprehensive Transportation Management Plan for Park lands in Southwest Marin, 2002*, shown in the table below, indicates that at present, parking capacity at Stinson (approximately 840 cars) does not meet demand on peak weekends for 1,050 spaces (2002). The projected peak-season parking demand for 2023 is 1,335 spaces, an increase of 285 spaces over current capacity.

Parking overflow might only be a problem during peak weekends for the next few years, with longer-term excess demand on peak and shoulder weekends. As shown in table 20, reducing the parking to approximately 420 spaces is likely not to be a problem during the off–season (October through April). However, even during the off–season, Stinson Beach does see increased visitors on sunny weekends, particularly those with holiday Mondays, so the off–season weekend estimates may be lower than actual demand.

TABLE 20. PARKING CAPACITY AT STINSON BEACH, 2002 AND 2023

Parking Demand at Stinson Beach – 2002					
Peak Season		Shoulder Season		Off–Season	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
365	1,050	260	450	155	270
Estimated Parking Demand at Stinson Beach – 2023					
Peak Season		Shoulder Season		Off–Season	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
465	1,335	315	540	180	310

Note: 2009 parking capacity: 839; with south lot removed: approximately 420

The effects of inadequate parking on the town include spillover parking in neighborhoods and illegal parking. Enforcement of parking restrictions in Stinson Beach is under the jurisdiction of the Marin County Sherriff. Because all of West Marin is currently served by two law enforcement officers, consistent enforcement of parking restrictions is unlikely to occur; enforcement and towing may have to be managed and could involve support from the National Park Service. Parking tickets alone are ineffective in controlling where people park in Stinson Beach; according to some

residents, some visitors appear to consider the cost of a parking ticket simply the price one pays to go to the beach. In a community already experiencing severe levels of congestion on peak weekends, parking reduction could lead to even greater traffic congestion as well as increased air pollution as cars circle the parking lot and neighborhoods looking for parking spaces.

As demonstrated in community meetings held in May 2009, residents of Stinson Beach are extremely concerned about the effects of traffic and of parking overflow problems in neighborhoods adjacent to the beach. Any reduction in peak-season parking would have to include as part of the measure significant proven mitigations in order to get local support and to prevent the town from being inundated with vehicles. One such mitigation might be increased transit service and greatly expanded marketing of transit and alternative modes, including signs on Highway 101 warning of the lack of parking in Stinson Beach. Currently, Stinson Beach is served by Marin Transit's Stagecoach service. Were parking to be reduced, the park staff may wish to partner with Marin Transit on increased service frequency, earlier and later hours, and joint marketing efforts to reduce the number of cars entering Stinson Beach. Closing the south parking lot may have long-term, major, adverse impacts, because it could substantially restrict access to Stinson Beach and lower the quality of the visitor experience because of increased traffic congestion. Alternatively, with substantially increased transit service, along with aggressive marketing and consistent parking enforcement, this may have a long-term, moderate, beneficial impact on the Stinson Beach area by reducing the number of cars on local roads.

Alternative 2 also includes a recommendation that, in the event of a catastrophic landslide on State Route 1 (Shoreline Highway), park managers would encourage abandonment of State Route 1 between Muir Beach and Stinson Beach in the affected segment. State Route 1 is ultimately controlled by Caltrans. If State Route 1 between Muir Beach and Stinson Beach were damaged and then abandoned at the affected segment, the coastal communities would sustain a long-term, moderate, adverse impact to connectivity. This would more than double the driving distance between Muir Beach and Stinson Beach from 5 miles to 13 miles, and lengthen the driving time from approximately 8 minutes to 30 minutes. This would have implications for residents of both communities and for emergency access to those areas.

San Francisco County—

With its focus on preserving the natural environment, this alternative has no transportation-related measures affecting San Francisco other than those common to all alternatives.

San Mateo County—

In addition to the measures described in the "Elements Common to all Alternatives" section cited previously, the following narrative describes the transportation measures for San Mateo County. At Sweeney Ridge, Sneath Lane could be converted to a trail and connect to the Bay Area Ridge Trail in the SFPUC watershed. Unnecessary fire roads could also be converted to trails or removed if not historic and natural resources restored. If acquired, a trailhead would be sited at Picardo Ranch with modest visitor support facilities (restroom, picnic tables, parking). These measures are likely to result in a long-term, minor, beneficial impact at Sweeney Ridge. In the SFPUC watershed easement, park managers would promote access along the existing multiuse trail and implementation of trail improvements proposed in the *San Francisco Watershed Management Plan* (2002), including completion of the north-south corridor through the watershed in areas of low sensitivity. Completion of these actions could have a long-term, minor to moderate, beneficial effect on access to these areas.

Alcatraz Island—

In alternative 2, visitor access to now-closed sites would be opened. Visitor access to the north end of the island would be expanded to provide wildlife viewing and research while carefully managing impacts to prevent disruption of natural resources. This would result in a long-term, minor, beneficial impact on visitor circulation on Alcatraz Island.

The scenic corridor zone (extending beyond the sensitive resources zone and along the island's eastern shore) would be managed to accommodate ferry access to the island. Some other types of water-based recreation could also be permitted. This would result in a long-term, minor, beneficial impact on visitor access to Alcatraz Island via water.

Conclusion. For park lands in Marin County, impacts on access and connectivity for alternative 2 are negligible, with two exceptions. A 50% reduction in parking at Stinson Beach could have either a long-term, major, adverse impact on accessibility and user experience in Stinson Beach during peak periods and holiday weekends by exacerbating an already difficult traffic congestion situation, or a long-term, moderate, beneficial effect if combined effectively with other efforts such as provision of transit, marketing of transit, and enforcement of parking restrictions.

Closing a segment of State Route 1 between Muir Beach and Stinson Beach may have a moderate to major, adverse impact on connectivity between these two communities.

There are no transportation actions for San Francisco for alternative 2.

In San Mateo, the transportation actions in alternative 2 may result in a minor to moderate, beneficial effect on connections by land through enhanced trail systems.

The improved access on Alcatraz Island to previously closed areas could result in a long-term, minor, beneficial impact to connectivity by water transit, and access to sites on Alcatraz Island via enhanced trails.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. In addition to the impacts highlighted below, the transportation impacts that are described above in alternative 1 also apply to this alternative for park lands in Marin, San Francisco, and San Mateo counties.

At Fort Funston, alternative 3 proposes relocating both access and parking to the edge of Fort Funston, allowing restoration of dunes. This measure has long-term, minor, impacts that could be considered either beneficial (for the restoration of the dunes) or adverse (because visitors would have a longer walk to reach the beach). This action does not appreciably limit or enhance visitors' ability to visit Fort Funston.

Alternative 3 envisions that visitors would be able to go to a larger number of locations on Alcatraz Island. Current barriers to visitor access and circulation include ruins of demolished buildings that would be stabilized and trails that would be upgraded, including the perimeter trail. Pedestrian circulation would be improved for many visitors, with more sites accessible. This could have a long-term, moderate, beneficial impact on visitor experience at Alcatraz Island, enhancing public safety by stabilizing structures.

This alternative also includes consideration of additional ferry service from San Francisco. Multiple ferry embarkation points could include a dock at Fort Mason, with primary embarkation still from the San Francisco waterfront. This would likely have a long-term, moderate, beneficial impact on visitor access to the island by providing more than one place to board the ferry in San Francisco.

Conclusion. In alternative 3, the relocation of parking and access to Fort Funston in San Francisco has a long-term, minor effect that is both slightly beneficial for preservation of the natural environment with a slightly adverse impact on visitor access.

For Alcatraz Island, this alternative could result in a long-term, moderate, beneficial increase in connectivity through additional ferry embarkation points; and a long-term, moderate, beneficial increase in access to additional historic features over an expanded area of the island because of trail expansion and improvement.

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

No-action Alternative

Analysis. The no-action alternative would generally call for the continuation of current management, programs, operations, funded construction projects, and current levels of annual operating funds.

Staffing levels would continue at current levels. While some divisions are staffed adequately, others have the need for additional staff. For example, despite creative approaches in supplementing the work of park maintenance staff, the required workload needed to maintain and support park assets exceeds available staff resources, resulting in a significant maintenance backlog. The aging infrastructure in the park requires increasing resources to maintain. A majority of the maintenance needs annually go unmet due to funding, which results in an expanding backlog of deferred maintenance.

The demand for educational and interpretive programs exceeds what the interpretive staff is able to provide. Other divisions, such as the cultural resources division, are supplemented by volunteer staff. The natural resources division's staffing levels prevent the park from completing the baseline studies and monitoring necessary to guide the park's natural resources preservation efforts in the future. A lack of sufficient patrol units has resulted in adverse impacts on resources. Additionally, due to staff limitations, the management of volunteers is very limited; and therefore the volunteer program does not have the capacity to grow and provide additional benefit to the park and monument.

While staff at Golden Gate National Recreation Area and Muir Woods National Monument lead the field in many of the programs they spearhead, such as development of partnerships, community based stewardship, and increased sustainability in many areas of park operations, the continued impact of low staffing levels on park operations is long term, moderate, and adverse.

Facilities continue to deteriorate given minimal additional project funding and the current inadequate annual base funding for maintenance. Even given the direction of the park asset management plan for prioritizing funds, a large gap in maintenance funding would result in an increase in the deferred maintenance backlog. Inadequate project and operational funding would result in long-term, moderate, adverse impacts on park facilities.

Facilities at Alcatraz Island are in an advanced stage of deterioration. Infrastructure for utilities is another constraint on the island. For example, potable and wastewater must be transported to and from the island by ferry. Water storage constraints also place limits on the visitation and operations presence on the island. Fire system water storage and distribution is an issue on the island. Power utilization and energy demands are also an issue; power is generated by diesel engines, which pollute and also constrain operations on the island. Each of these systems requires improvement for continued use at current levels. A lack of future project funding would result in long-term, major, adverse impacts on mission critical facilities on the island.

Facility location, condition, and available use also impact park operations. Maintenance facilities do not meet the needs of the park; currently, long distances from storage and maintenance facilities to job sites, and inappropriate storage facilities for equipment affect the operations adversely and result in equipment deterioration. Park public safety is also impacted negatively by the current location of facilities; currently, law enforcement staff has limited facilities in the headlands and no base of operations in San Mateo County. The operations would continue to have long-term, moderate, adverse impacts due to current maintenance and public safety facility locations, size, and lack of modern and secure features.

Park partners are vital to the continued operation of the park, as they provide generous funds, organize volunteers, and provide interpretive and educational programs. The park's continued efforts at developing and maintaining partnerships would continue to provide long-term, moderate, beneficial impacts on park operations.

The Volunteers-In-Parks program is critical to the ongoing operation of Golden Gate National Recreation Area and Muir Woods National Monument. In a typical year, between 10,000 and 14,000 volunteers provide an excess of 300,000 volunteer hours to various programs and efforts within the park and monument. The continued management of volunteer programs at the park and monument contribute a continuing long-term, moderate, beneficial impact to park operations.

Conclusion. Inadequate staffing levels would result in continued long-term, moderate, and adverse impacts on operations. Continued partner and volunteer efforts would result in long-term, moderate, beneficial impacts on park operations, although these efforts would be limited by current staffing levels. Inadequate project and operational funding would result in long-term, major, adverse impacts on park facilities throughout Golden Gate National Recreation Area including Alcatraz Island. The inadequate maintenance and public safety facilities and their locations would result in continued long-term, moderate, and adverse impacts on operations.

Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)

Analysis. While designed to contribute to the protection of resources and the enhancement of visitor opportunities, the proposals of alternative 1 will achieve these ends only if staffing and operating funds are increased in accordance with the cost estimates identified for this alternative. If funding and needed staffing levels are not made available when these actions are implemented, then the proposed actions would have long-term, moderate, adverse effects on park operations.

Additional staff needs projected under this alternative would supplement many of the divisions with the people needed to achieve the resource and visitor experience objectives of the alternative. Expanding operations into San Mateo County requires increasing employees and support facilities in order to manage the existing and newly acquired lands. In addition, some staff would be responsible for organizing and managing volunteer groups, thus leveraging park resources with the expertise and enthusiasm of willing community members and youth groups. While the park would be better able to meet resource protection goals as well as visitor experience and safety through the addition of these FTE employees, salaries for these employees would appreciably increase the operating budget and the need to develop additional partnerships. Increased staff would result in long-term, moderate, beneficial impacts on operations if appropriate funding is available, otherwise the actions of this alternative would continue

the adverse impacts identified in the no-action alternative.

The proposed new or reconstructed facilities in this alternative would require additional capital investments. If funded, the improvements would result in a decrease in the park's deferred maintenance. Unless the cyclic maintenance budget is adjusted to maintain the park's facilities as identified in this alternative, the deferred maintenance will increase, even with an initial investment in that asset. Adjusting the operations and maintenance budget to realistically reflect the true costs of a facility will have a long-term, moderate, beneficial impact on park operations; otherwise, the impact would be adverse and result in an increase of deferred maintenance.

Fundraising through park partners to support specific programs to improve park facilities has often been successful, although maintenance funding is typically more difficult to come by. The investment in facilities would improve facility conditions, reduce the deferred maintenance backlog, meet sustainability goals, and improve the ability of the park to meet its goals for natural and cultural resource protection and improve visitor experience. Construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, major, beneficial impacts on park operations if funding could be obtained. Construction activities would impact park operations in the short term and would be minor and adverse, as some inefficiency would be caused by the closure of buildings during construction.

Enhancing park operations at Fort Funston would improve maintenance and public safety functions in that area. The proposed "portals" at Rancho Corral de Tierra, Upper Fort Mason, and Tennessee Valley would improve interpretation and public safety operations with opportunities for visitors to access park staff. These changes would result in long-term, moderate, beneficial impacts on park operations.

At Alcatraz Island, increases in staff would allow increased levels of maintenance, public safety, resource protection, and visitor services. These increases in staff would result in long-term, moderate, beneficial impacts on operations, if the positions are adequately funded.

Alternative 1 proposes extensive restoration and rehabilitation of facilities on Alcatraz Island. These actions would result in long-term, moderate, beneficial impacts on the operations of Alcatraz Island. Construction activities would result in minor, short-term, adverse impacts due to the closure of facilities.

Conclusion. Increased number of park staff would result in long-term, moderate, beneficial impacts on operations if appropriate, annual base funding is available. Construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, moderate, beneficial impacts on park operations by addressing deferred maintenance. Construction activities would result in short-term, minor, adverse impacts on park operations, because of closures during the work. An expanded maintenance facility at Fort Funston and the addition of three "portals" would result in long-term, moderate, beneficial impacts on park operations.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. While designed to contribute to the protection of resources and the enhancement of visitor opportunities, the proposed actions of alternative 2 would achieve these ends only if staffing and operating funds are increased in accordance with the cost estimates identified for this alternative. If funding and needed staffing levels are not made available when these actions are implemented, then the proposed actions would have long-term, moderate, adverse effects on park operations.

This alternative would require considerable increases in park staffing to manage the new park lands in San Mateo County; educate visitors about the coastal ecosystems of the area; gather baseline natural and cultural resource information, and use this information to guide the future of these programs; maintain facilities and landscapes; and provide for effective public safety in areas where visitors are concentrated as well as in more primitive areas. Increases in staffing levels would result in a long-term, moderate, beneficial impact in the ability of the park to meet its operating and mission goals while leveraging the support of partners and volunteers. However, salaries for these FTE employees would appreciably increase the operating budget and the need to develop additional partnerships. Increased staffing would result in long-term, moderate, beneficial impacts on operations if adequate funding accompanied the staffing increases.

The removal of noncritical facilities and the restoration of those landscapes would result in fewer maintenance needs and the removal of the deferred maintenance associated with those structures and the redistribution of park personnel and funds to remaining facilities.

Capital investment in facilities would improve facility conditions, help to reduce the deferred maintenance backlog, and help to meet sustainability goals. If adequately funded, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, moderate, beneficial impacts on park operations. Construction and landscape restoration activities would result in short-term, minor, adverse impacts, caused by the closure of buildings and lands during construction or restoration.

On Alcatraz Island, increases in staff would allow for improved maintenance as well as increased resource protection and public safety, especially if visitor use extends into the late evenings. Such increases in staff and work would result in long-term, moderate, beneficial impacts on operations if positions are adequately funded. The increased difficulty for public safety to reach the more primitive areas of the island that would become open in this alternative would result in long-term, negligible to minor, adverse impacts on operations.

On Alcatraz Island, alternative 2 proposes wilding of many areas on the island and stabilizing some structures. In addition, alternative 2 provides for various treatments for each historic structure (e.g., stabilization, restoration, or rehabilitation). Actions in this alternative will address structures that are in poor condition and pose threat of injury to visitors and staff. The improved facility conditions would result in long-term, moderate, beneficial impacts on the operations of Alcatraz Island and would address the deferred maintenance issues. Construction activities would result in minor, short-term, adverse impacts due to the closure of facilities. Increases in law enforcement staff would allow for overnight experiences on the island.

Conclusion. Increased staff would result in long-term, moderate, beneficial impacts on operations if accompanying funding is appropriate. Construction, stabilization, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, moderate, beneficial impacts on park operations and address deferred maintenance issues. Construction and landscape restoration activities would result in minor, adverse impact in the short term, as some inefficiency would be caused by closure of buildings and lands during construction or restoration. The increased difficulty for public safety personnel to reach the more primitive areas would result in long-term, minor, adverse impacts on operations.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Alcatraz Island)

Analysis. While designed to contribute to the protection of resources and the enhancement of visitor opportunities, the proposals of alternative 3 will achieve these ends only if staffing and operating funds are increased in accordance with the cost estimates identified for this alternative. If funding and needed staffing levels are not made available when these actions are implemented, then the proposed actions would have long-term, moderate, adverse effects on park operations.

In addition to the impacts outlined in alternative 1, alternative 3 would require additional park staff and park partners to support visitor programs and services throughout the park, significant new interpretive and educational programs at Alcatraz Island, expanded natural and cultural stewardship centers, and visitor programs associated with the park collections. These additional park staff would enable the park to provide interpretive and educational programs that are especially tied to cultural and natural resources associated with the historic immersion management zone. Additionally, maintenance and public safety staff would require expanded hours at Alcatraz Island and for management of the park lands in San Mateo County. Increased staff would result in long-term, moderate, beneficial impacts on operations if appropriate funding is available; otherwise, the actions of this alternative would continue the adverse impacts identified in the no-action alternative.

Increased restoration of nationally significant resources would benefit operations by reducing deferred maintenance, improving facility conditions, and helping the park to reach its sustainability goals. The construction, stabilization, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, moderate, beneficial impacts on park operations if funding could be obtained. Some construction and landscape restoration activities would result in minor, adverse impacts on park operations in the short term, because of the closure of buildings and lands during construction or restoration. Costs to implement this alternative would be somewhat greater than historic capital project fund amounts. The ability of the park and partners to raise needed funds would dramatically affect the ability to achieve the goals of alternative 3.

Changes in facility use and location would result in moderate, long-term, beneficial impacts on park operations. The establishment of a visitor center at Capehart, a hub at Rancho Corral de Tierra, and additional visitor services at Fort Mason would make it easier for park staff to provide educational and interpretive information to visitors throughout the park. An operations area at Fort Miley would improve efficiencies in public safety and maintenance in that area.

At Alcatraz Island, increases in staff would permit improved maintenance as well as increased levels of public safety and resource protection. As this alternative proposes a high level of restoration to nationally significant resources, these areas would need to be staffed and managed accordingly. If adequately funded, these increases in staff would result in long-term, moderate, beneficial impacts on park operations.

Also at Alcatraz Island, national treasure facilities would be stabilized, restored, or rehabilitated. Currently, many of the facilities are in poor condition and pose the threat of injury to visitors and staff. The improved facility conditions would result in long-term, moderate, beneficial impacts on park operations at Alcatraz Island and help to address the deferred maintenance issues. Construction activities would result in minor, short-term, adverse impacts due to the closure of facilities. The funding needed to complete the projects in this alternative is significant.

Conclusion. Increased staff would result in long-term, moderate, beneficial impacts on operations if adequate funding accompanies the increase in park staffing. Construction, stabilization, rehabilitation, restoration, and demolition projects proposed in the alternative would result in long-term, moderate, beneficial impacts on park operations, but would also result in short-term, minor, adverse impacts while the activities are underway. Facility use and location changes would result in long-term, moderate, and beneficial impacts on park operations.

MUIR WOODS NATIONAL MONUMENT

NATURAL RESOURCES – PHYSICAL RESOURCES

Carbon Footprint and Air Quality

No-action Alternative

Analysis. The continuation of current conditions and management would continue to result in adverse impacts on air quality/ carbon footprint. Baseline GHG emissions (2008) for Muir Woods National Monument are estimated at 2,257 MTCO2e.

Mobile combustion associated with visitor travel in personal automobiles and the pilot shuttle would continue to be the largest contributor of GHG emissions (2,179 MTCO2e), representing about 96% of gross emissions at the monument.

Greenhouse gas emissions from visitors and NPS operations do contribute to elevated ozone and other air quality concerns. The National Park Service would continue to reduce GHG emissions by reducing energy consumption and replacing high-emitting apparatus with green technology, resulting in a beneficial impact.

Overall, when compared to background levels of air pollution and GHG emissions in the region or the nation (estimated at 6 billion in 2007), impacts on air quality from the no-action alternative would be long term, adverse, and negligible.

Conclusion. Total gross emissions for Muir Woods National Monument would be estimated at 2,257 MTCO2e, resulting in long-term, minor, adverse impacts on the monument's carbon footprint. Overall, when compared to background levels of air pollution and GHG emissions in the region or the nation (estimated at 6 billion in 2007), impacts on air quality from the no-action alternative would be long term, adverse, and negligible.

Alternative 1: Connecting People with the Parks

Analysis. Under alternative 1 visitor travel to the monument would be altered so that dependency on personal automobiles would be reduced. About 25% of parking would be removed and the Muir Woods shuttle would be expanded and could run on compressed natural gas, a lower emissions fuel. As a result, mobile combustion is estimated to be reduced by 20% to 1,740 MTCO2e. When compared to the no-action alternative, impacts on air quality/carbon footprint would be reduced, resulting in a beneficial impact.

Emissions from stationary combustion and purchased electricity would be slightly reduced when compared to the no-action alternative as result of facility removal and corresponding reductions in energy usage. Emissions associated with wastewater treatment and solid waste would be the same as under the no-action alternative.

Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove facilities (buildings and parking areas) and reclaim the disturbed sites.

Long-term, adverse impacts on air quality / carbon footprint would also be expected due to increases in energy consumption and related emissions attributed to the new welcome center / shuttle parking on Highway 101.

The combined effect of the actions included in alternative 1 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,812 MTCO2e. This

would result in long-term, minor, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 1 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,812 MTCO2e. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2 visitor travel to the monument would be altered so that dependency on personal automobiles would be substantially reduced. Most of the parking at the monument would be removed and the Muir Woods shuttle would be expanded to a year-round operation and could run on compressed natural gas, a lower emissions fuel. As a result, mobile combustion is estimated to be reduced by 85% to 333 MTCO2e. When compared to the no-action alternative, impacts on air quality / carbon footprint would be reduced, resulting in a beneficial impact.

Emissions from stationary combustion and purchased electricity would be slightly reduced when compared to the no-action alternative as result of facility removal and corresponding reductions in energy usage. Emissions associated with wastewater treatment and solid waste would be the same as under the no-action alternative.

Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove facilities (buildings and parking areas) and reclaim the disturbed sites as well as from the restoration of Redwood Creek.

Long-term, adverse impacts on air quality/ carbon footprint would also be expected due to increases in energy consumption and related emissions attributed to the new welcome center / shuttle parking on Highway 101.

The combined effect of the actions included in alternative 2 is estimated to decrease the gross emissions of Muir Woods National Monument by 82% to 401 MTCO2e. This would result in long-term, major, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 2 is estimated to decrease the gross emissions of Muir Woods National Monument by 82% to 401 MTCO2e. This would result in long-term, major, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Under alternative 3 visitor travel to the monument would be altered so that dependency on personal automobiles would be reduced. About 25% of parking would be removed and the Muir Woods shuttle would be expanded and could run on compressed natural gas, a lower emissions fuel. As a result, mobile combustion is estimated to be reduced by 20% to 1,740 MTCO2e. When compared to the no-action alternative, impacts on air quality / carbon footprint would be reduced, resulting in a beneficial impact.

Emissions from stationary combustion and purchased electricity would be slightly reduced when compared to the no-action

alternative as result of facility removal and corresponding reductions in energy usage. Emissions associated with wastewater treatment and solid waste would be the same as under the no-action alternative.

Short-term adverse impacts on air quality would occur as a result of the construction activities needed to remove facilities (buildings and parking areas) and reclaim the disturbed sites as well as from targeted restoration of Redwood Creek.

The combined effect of the actions included in alternative 3 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,813 MTCO2e. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Conclusion. The combined effect of the actions included in alternative 3 is estimated to decrease the gross emissions of Muir Woods National Monument by 20% to 1,813 MTCO2e. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint. As in the no-action alternative, impacts on air quality (when compared to background levels of air pollution in the region and nation) would be negligible.

Carbon Footprint for the NPS Preferred Alternative for Golden Gate National Recreation Area (including Alcatraz Island) and Muir Woods National Monument

A description of carbon footprint impacts for the full preferred alternative (alternative 1 for Marin, San Francisco, and San Mateo counties; and alternative 3 for Alcatraz and Muir Woods) is included here and at the end of the related section for Muir Woods National Monument. The impact analysis concludes that the preferred alternative would result in total emissions of 8,979 MTCO2e, a decrease of 1% from the no-action alternative's 9,075 MTCO2e. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint.

Soils and Geologic Resources and Processes

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance of existing facilities (including structures, parking lots, roads, and trails) would continue to cause parkwide impacts on soils and geologic resources due to the permanent loss and function of these resources and from erosion associated with unsustainable trails and roads. The impact of these activities would be long term, minor to moderate, adverse, and localized, but would occur throughout Muir Woods National Monument.

Projects to improve natural habitat values and ecosystem function, such as the modification of trails and roads, would have beneficial effects on soils and geologic resources and processes because they would improve or restore the functionality of natural processes—the impact would be long term, minor, beneficial, and localized.

Recreational use would continue to cause compaction and erosion of soils, resulting in long-term, minor, adverse, localized impacts throughout the monument.

NPS efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on geologic resources and soils due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to geologic resources and soils from the no-action alternative would be long term, range from

minor to moderate adverse to minor beneficial, and be localized and monument-wide. Adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and education and stewardship activities.

Alternative 1: Connecting People with the Parks

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of soils and geologic resources and processes. Approximately 91% of the monument would be zoned using the natural and sensitive resources zones.

The removal of facilities/structures and the reclamation of disturbed building sites in the Camino del Canyon and Druid Heights area and the current entrance to Muir Woods National Monument, as well as the removal of the upper parking lot, would improve soil function and integrity and restore natural geologic processes. The impact of these activities would be long term, minor, beneficial, and localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur during construction activities.

Visitor access and use would be expanded under alternative 1, resulting in increased soil compaction and erosion; however, compared to use patterns under the no-action alternative, only slight adverse impacts would be expected. Most impacts would be contained within defined visitor use areas and on trails. The impact, especially in areas off-trail, would be long term, minor, adverse, and localized. This impact would occur in areas throughout the monument.

New recreational development (new facilities at Bridge 4 and welcome center / shuttle parking at Highway 101) would have long-term, adverse, localized impacts on soils and geologic resources due to the permanent loss of soil function and integrity resulting from new development and increased erosion from facility construction and maintenance. The intensity of the impact would range from negligible to minor because in some cases the impact would be confined to previously developed or disturbed sites.

Impacts from an expanded NPS educational and stewardship programs would enhance the beneficial effect on soils and geologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to soils and geologic resources and processes from alternative 1 would be short and long term, range from negligible adverse to minor beneficial, and be localized. Adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail relocation, the restoration of disturbed sites, and improved resource understanding and public support.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would be used to assist in the protection of soils and geologic resources and processes. Approximately 99% of the park would be zoned using the natural and sensitive resources zones—the most of all the alternatives.

Nearly all of the built environment would be removed from Muir Woods National Monument. These include facilities and structures in the Camino del Canyon and Druid Heights area as well as at the current entrance and within the primeval redwood forest of the monument, the upper and lower parking areas, unneeded management roads, and several miles of trails. In addition, Redwood Creek would be restored. Restoration of these areas would reduce soil erosion, improve soil function and integrity, and restore natural geologic processes. The

impact of these activities would be long term, moderate, beneficial, and localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur during demolition and restoration activities.

Impacts from visitor access and use would be less than those described in the no-action alternative because it would be limited and highly controlled, resulting in long-term, minor, beneficial, localized impacts.

Impacts from expanded NPS educational and stewardship programs would enhance the beneficial effect on soil and geologic resources due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to soils and geologic resources and processes from alternative 2 would be short and long term, range from minor adverse to moderate beneficial, and localized. Adverse impacts would occur from visitor use and construction. Beneficial impacts would occur from the removal of facilities and structures and restoration of disturbed sites.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of soils and geologic resources and processes. Approximately 85% of the monument would be zoned using the natural and sensitive resources zones.

The impacts on geologic resources and soils from the continued maintenance of existing facilities and structures under alternative 3 would be the less than the no-action alternative. New recreational development (including new recreational amenities near Bridge 4, new trails in the monument, and picnicking facilities) would have long-term, minor, adverse, localized impacts on geologic resources and soils due to the permanent loss of soil function and integrity resulting from new development and increased erosion from facility construction and maintenance.

Beneficial effects on geologic resources and soils would occur from the removal of facilities and structures and the restoration of disturbed sites throughout the monument (such as the removal of the upper parking area; a number of structures in the Camino del Canyon and Druid Heights; and targeted removal of riprap along Redwood Creek). A total of about 28 acres of built environment would be removed and restored to natural conditions. The impact of these activities would be long term, moderate, beneficial, and localized. Short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur during construction activities.

Visitor access and use would continue to cause adverse impacts on geologic resources and soils due to the effects compaction and erosion. However, the impact would be less than under the no-action alternative because primary use areas and trails would be moved away from the creek (where soils may be more prone to compaction and erosion) and new boardwalks would be developed that reduce these impacts, resulting in a beneficial impact. The impacts on geologic resources and soils from visitor use under alternative 3 would be negligible.

Impacts from NPS educational and stewardship programs would generally be the same as those described in the no-action alternative.

The expanded NPS interpretive, educational and stewardship programs would engage many more visitors and could have a long-term, moderate, beneficial effect on soils and geologic resources and processes due to increased public understanding and support for resource protection and management—the impact would be long term, moderate, beneficial, and monumentwide.

Conclusion. Overall, the impact to soils and geologic resources and processes from alternative 3 would be short and long term, range from negligible adverse to moderate beneficial, and be localized. Adverse impacts would occur from new recreational development and visitor use. Beneficial impacts would occur from the removal of facilities and structures and restoration of the upper parking lot and disturbed sites, as well as creek restoration activities.

Water Resources and Hydrologic Processes

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance (or lack of maintenance in some cases) of existing facilities (including structures, roads, and trails) would continue to cause localized impacts on water quality due to pollution from urban runoff and turbidity from soil erosion. The impact of these activities would be long term, minor to moderate, adverse, and localized, but would occur throughout the monument.

Structures would remain in the 100-year floodplain of Redwood Creek resulting in adverse impacts. Trails, bridges, administrative/concession buildings, the gift shop, restrooms are in the floodplain. Retention of these facilities would continue to affect floodplain function. The structures themselves could affect the flow of water during floods and paved surfaces such as the parking area and portions of the trail system could affect the capacity of the floodplain to store floodwaters. Furthermore, the existing rock revetment that lines portions of Redwood Creek would continue to adversely affect natural hydrologic processes and floodplain function. Riparian wetland expansion would continue to be adversely affected by the presence of the parking area. The impact of these activities would be long term, moderate, adverse, and localized.

Recreational use would continue to cause erosion of soils resulting in turbidity. Vehicle use at parking areas and on roadways in the vicinity of the monument would continue to affect water quality from runoff that contains chemical contaminants. These activities would result in long-term, minor, adverse, localized impacts on water quality.

NPS efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to water resources and hydrologic processes from the no-action alternative would be long term, range from minor adverse to minor beneficial, and be localized and monument-wide. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), visitor use. Beneficial impacts would occur from education and stewardship activities.

Alternative 1: Connecting People with the Parks

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. Approximately 91% of the park would be zoned using the natural and sensitive resources zones.

The removal of some facilities and structures and the reclamation of disturbed building sites and roads in the Camino del Canyon and Druid Heights area and the main part of Muir Woods National Monument, including removal of the upper parking lot, would improve natural hydrologic processes. The impact would be long term, minor, beneficial, and localized. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction and restoration activities.

Impacts on floodplains would be the same as described under the no-action alternative, except for those associated with the removal of the upper parking area and restoration of the site to a natural area. The removal of the upper parking area would eliminate the impervious surface at the site, restoring floodwater capacity and natural floodplain function, resulting in a long-term, minor, beneficial impact.

Visitor access and use would be expanded under alternative 1, potentially resulting in some increase in erosion along trails and at primary visitor use areas that could have impacts on water quality—the impact would be long term, negligible to minor, adverse, and localized.

New recreational development (new facilities at Bridge 4 and welcome center/shuttle parking at Highway 101) could have short-term, negligible to minor, adverse, localized impacts on water quality from increased erosion and sedimentation and the potential for chemical contamination resulting from inadvertent chemical spills from heavy equipment at construction sites. Similar impacts on water quality could occur over the long term due to the increased potential for fecal coliform contamination and urban pollutants. These activities would result in long-term, minor, adverse, localized impacts on water quality. However, the new restroom facility may reduce the presence of human waste in Muir Woods National Monument and the associated water quality impacts.

Impacts from expanded NPS educational and stewardship programs would enhance the beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to water-related resources from alternative 1 would be short and long term, range from negligible adverse to minor beneficial, and be localized and parkwide. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), new recreational development, and expanded visitor use. Beneficial impacts would occur from trail and road maintenance and the restoration of disturbed sites and removal of the upper parking area.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. Approximately 99% of the park would be zoned using the natural and sensitive resources zones.

Alternative 2 would reduce impacts on water quality by eliminating erosion from unsustainable trails and unneeded management roads, resulting in long-term, minor to moderate, beneficial, localized impacts. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction and restoration activities.

The substantial removal of facilities and structures and the reclamation of disturbed building sites and road in the Camino del Canyon and Druid Heights area and the main part of Muir Woods National Monument, as well as the removal of the upper and lower parking areas, would improve the natural hydrologic processes. The impact would be long term, moderate, beneficial, and localized. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction and restoration activities.

Impacts on floodplains would include the removal of the upper and lower asphalt parking areas and restoration of about 6,700 linear feet of Redwood Creek (including rock revetment) and its floodplain. This would restore floodwater capacity and natural floodplain function and improve riparian wetlands and hydrologic processes. Water

flow and floodplain function would also be restored by removing or redesigning bridges. These activities would result in long-term, moderate to major, beneficial impacts on floodplains and related water resources.

Impacts from expanded NPS educational and stewardship programs would enhance the beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to water-related resources from alternative 2 would be short and long term, range from minor adverse to moderate-major beneficial, and be localized. Adverse impacts would occur from expanded visitor use and restoration activities. Beneficial impacts would occur from the restoration of disturbed sites, removal of structures, facilities, roads, and asphalt parking areas and substantial creek and floodplain restoration.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of water resources and hydrologic processes. Approximately 85% of the park would be zoned using the natural and sensitive resources zones.

Alternative 3 would reduce impacts on water quality by reducing erosion from unsustainable trails and roads, resulting in long-term, minor, beneficial, localized impacts. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction and restoration activities.

The removal of facilities, structures, roads, and the reclamation of disturbed building sites in the Camino del Canyon and Druid Heights area and the main part of Muir Woods National Monument, as well as the removal of the upper parking area, would improve natural hydrologic processes. The impact would be long term, minor, beneficial, and localized. Short-term, minor, adverse impacts on water quality could occur from sedimentation and runoff during construction activities.

Impacts on floodplains would include the removal of the upper parking area and conversion of the remaining asphalt surface to a more pervious surface, as well as targeted restoration of Redwood Creek (including rock revetment) and its floodplain. This would restore flood water capacity and natural floodplain function and improve riparian wetlands and hydrologic processes. Water flow and floodplain function would also be restored by removing or redesigning bridges. These activities would result in long-term, moderate, beneficial impacts on floodplains and related water resources.

Visitor access and use would be expanded under alternative 3, potentially resulting in some increase in erosion along trails and at primary visitor use areas that could have impacts on water quality—the impact would be long term, negligible to minor, adverse, and localized.

The expanded NPS interpretive, educational, and stewardship programs would engage many more visitors and could have a long-term, moderate, beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, moderate, beneficial, and monumentwide.

Conclusion. Overall, the impacts on water-related resources from alternative 3 would be short and long term, range from negligible adverse to moderate beneficial, and be localized. Adverse impacts would occur from the presence and maintenance of existing facilities (including rock revetment), new recreational development, expanded visitor

use, and construction and restoration activities. Beneficial impacts would occur from the restoration of disturbed sites, removal of the upper parking area, improvements to Redwood Creek, and restoration of the Camino del Canyon and Druid Heights area.

Natural Resources – Biological Resources

Habitat (vegetation and wildlife)

No-action Alternative

Analysis. Under the no-action alternative, the presence and maintenance (or lack of maintenance in some cases) of existing facilities (including structures, parking lots, roads, and trails) would continue to cause localized impacts on vegetation and wildlife habitat by fragmenting natural areas and increasing the potential for nonnative plant species to displace native species and affect native habitat. The rock revetment that lines Redwood Creek and the trails in the floodplain are affecting vegetation and wildlife habitat by limiting natural hydrologic process that support natural conditions. Furthermore, the developed and hardened trails (such as boardwalks) themselves act as barriers to wildlife movement on the ground and in the forest canopy. The impact of these activities would be long term, moderate, adverse, and localized, but would occur throughout the monument.

Rehabilitating disturbed sites would continue to improve the integrity and diversity of habitats available to aquatic and terrestrial organisms. Ongoing vegetation management, including the use of prescribed fire, and monitoring of plants and wildlife allows the National Park Service to improve native habitat conditions. The impact of these activities would be long term, minor, beneficial, and localized.

Recreational use would continue to reduce habitat integrity by trampling plants, introducing and increasing the spread of nonnative species, causing disturbance (flushing and displacement) to animals, and increasing the potential for human-wildlife conflict resulting from habituation due to the presence of humans and the introduction of unnatural food sources. Recreational use also generates noise and unnatural light sources that affect wildlife. These activities would result in long-term, minor to moderate, adverse, localized impacts throughout the monument.

NPS efforts to provide educational and participatory stewardship programs would continue to have a beneficial effect on water resources and hydrologic processes due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to vegetation and wildlife habitat from the no-action alternative would be long term, range from minor-moderate adverse to minor beneficial, and be localized and monumentwide. Adverse impacts would occur from the presence and maintenance of existing facilities and visitor use. Beneficial impacts would occur from restoration and ongoing management and monitoring activities.

Alternative 1: Connecting People with the Parks

Analysis. Under alternative 1, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. Approximately 91% of the park would be zoned using the natural and sensitive resources zones.

The removal of facilities/structures and the reclamation of disturbed building sites in the Muir Woods Addition area and the main part of Muir Woods, as well as the removal of the upper parking lot, would improve vegetation

and wildlife habitat by improving habitat structure and the diversity of habitats available to support various species' needs. Human-wildlife conflicts would be reduced because the food concession in the monument would be eliminated, resulting in less wildlife habituation, resulting in a beneficial impact. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. The impact would be long term, minor to moderate, beneficial, and localized. Short-term, minor, adverse impacts on habitat could occur during construction activities.

Visitor access and use would be expanded under alternative 1, potentially resulting in additional impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long term, minor, adverse, and localized. New recreational development (new facilities at Bridge 4 and welcome center at Highway 101) would have long-term, negligible, adverse, localized impacts on vegetation and wildlife due to the permanent loss of plants and wildlife habitat within the construction footprint. Short-term, minor, adverse impacts on vegetation would also occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts on wildlife, such as disturbance, would occur during construction.

Impacts from expanded NPS educational and stewardship programs would enhance the beneficial effect on impacts on habitats due to increased public understanding and support for resource protection and management—the impact would be long term, minor, beneficial, and monumentwide.

Conclusion. Overall, the impact to vegetation and wildlife habitat from alternative 1 would be short and long term. They would range from negligible adverse to minor or moderate beneficial and would be localized as well as monumentwide. Adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from the restoration of disturbed sites.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under alternative 2, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. Approximately 99% of the park would be zoned using the natural and sensitive resources zones.

Nearly all of the built environment would be removed from Muir Woods—facilities/structures in the Muir Woods addition area as well as in the main part of Muir Woods, the upper and lower parking areas, unneeded management roads, and several miles of trails. Restoration of about 6,700 linear feet of Redwood Creek would improve habitat structure and the diversity of habitats available to support various species' needs—an enhancement for aquatic and terrestrial organisms. Restoring the creek and its floodplain function would result in increased soil deposition that would assist in the recruitment of redwood trees. Human-wildlife conflicts would be reduced because the food concession in the monument would be eliminated, resulting in less wildlife habituation, a beneficial impact. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. The impact would be long term, moderate to major, beneficial, and localized.

Short-term, minor, adverse impacts on vegetation would also occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts on wildlife, such as disturbance, would occur during construction.

Impacts from visitor access and use would be less than those described in the no-action alternative because it would be limited and highly controlled, resulting in long-term, minor, beneficial, localized impacts. Some impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas would still occur.

Impacts from an expanded NPS educational and stewardship programs would enhance the beneficial effect on habitats due to increased public understanding and support for resource protection and management. In addition, partnering with other agencies to manage visitor access and promote restoration and habitat management as part of the UNESCO Golden Gate Biosphere Reserve would elevate this issue and could result in benefits to vegetation and wildlife habitat. These actions would result in long-term, minor, beneficial, and monumentwide impacts.

Conclusion. Overall, the impact to vegetation and wildlife habitat from alternative 2 would be short and long term. They would range from minor adverse to moderate or major beneficial and would be localized and monumentwide. Adverse impacts would occur from visitor use and construction activities. Beneficial impacts would occur from the restoration of disturbed sites and creeks.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative For Muir Woods National Monument)

Analysis. Under alternative 3, a variety of management zones would be used that would assist in the protection of vegetation and wildlife habitat. Approximately 85% of the park would be zoned using the natural and sensitive resources zones.

The removal of facilities/structures and the reclamation of disturbed building sites in the Muir Woods Addition area and the main part of Muir Woods, as well as the removal of the upper parking lot, would improve vegetation and wildlife habitat by improving habitat structure and the diversity of habitats available to support various species' needs. Targeted restoration of Redwood Creek and its floodplain would improve habitat structure and the diversity of habitats available to support various species' needs—an enhancement for aquatic and terrestrial organisms. Human-wildlife conflicts would be reduced because the food concession in the monument would be eliminated, resulting in less wildlife habituation—a beneficial impact. These kinds of activities would reduce environmental stressors and increase the resiliency of species and systems to the effects of climate change. The impact would be long term, moderate, beneficial, and localized.

Short-term, minor, adverse impacts on vegetation would also occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts on wildlife, such as disturbance, would occur during construction.

New recreational development (new trails and additional visitor amenities) would cause increased habitat fragmentation and loss, resulting in long-term, minor to moderate, adverse, localized impacts.

Visitor access and use would be expanded under alternative 3, potentially resulting in additional impacts on vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long term, minor, adverse, and localized.

The expanded NPS interpretive, educational, and stewardship programs would engage many more visitors and could have a long-term, moderate, beneficial effect on habitats due to increased public understanding and support for resource protection and management—the impact would be long term, moderate, beneficial, and monumentwide.

Conclusion. Overall, the impacts on vegetation and wildlife habitat from alternative 3 would be short and long term, range from minor adverse to moderate beneficial, and be localized and monumentwide. Adverse impacts would occur from visitor use and construction activities. Beneficial impacts would occur from the restoration of disturbed sites and creeks.

Special Status Species (federal and state threatened and endangered species)

No-action Alternative

In general, many of the impacts on vegetation and wildlife described in the habitat section of this part would apply to special status species. For example, visitor use and new development would result in changes that would be adverse impacts on listed species and their habitats. Likewise, vegetation management and creek restoration would result in beneficial impacts on listed species and their habitats. Keeping this in mind, the analysis provided below generalizes about the effects of land management priorities and, where possible, focuses on the impacts that specific actions included in the alternatives may have on listed species and their habitats.

Federal Threatened and Endangered.

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

These two listed salmonid species are analyzed together because of the similarities in their life characteristics, habitat requirements, and the effects of impacts on the two species.

Within the vicinity of Muir Woods National Monument, coho salmon are restricted to Redwood Creek and Eastkoot Creek in Marin County. Steelhead trout are restricted to Redwood Creek and the drainages to Bolinas Lagoon and Rodeo Lagoon in Marin County. Therefore, impacts would be restricted to these locations.

National Park Service activities, such as vegetation management, creek restoration, and efforts to improve water quantity and quality within the Redwood Creek watershed, would have beneficial impacts on maintaining habitat characteristics that support anadromous fish. Projects at Muir Woods National Monument (vegetation management and creek restoration) would have beneficial impacts on habitat parameters required by the two species. These projects would improve riparian vegetation and in-stream habitat complexity, resulting in improvements to spawning, rearing, and migratory habitats. Critical habitat would be affected by restoration activities. Within the immediate project area, short-term, minor, adverse, localized impacts on nearly all essential features of critical habitat (substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food, riparian vegetation, space, and safe passage conditions) would be expected. However, these short-term impacts would be outweighed by the beneficial impacts expected to occur over the long term. The National Park Service would continue to monitor coho and steelhead populations and habitat and inventory potential habitat.

Controlling and managing visitor use would reduce impacts on coho and steelhead, such as habitat alteration and direct impacts from recreational use and development; however, some adverse impacts would continue. The upper and lower parking areas, as well as the rock revetment that lines sections of Redwood Creek, would continue to adversely affect the integrity of fish habitat by impacting natural floodplain function and therefore habitat integrity, resulting in an adverse impact.

The primary threats to coho and steelhead would continue to be loss and modification

of habitat, water diversions, habitat channelization, sedimentation, and degraded water quality—adverse impacts associated with increased urbanization of the region. Collectively, impacts on coho salmon and steelhead trout resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term. Consultation for specific projects would occur as necessary.

Northern spotted owl (Strix occidentalis caurina)—

Suitable habitat for northern spotted owls include all evergreen forested habitat north of State Route 1 in Marin County. Within the planning area, known spotted owl populations are currently limited to Muir Woods National Monument, Homestead Valley, and the Stinson Gulch area. Therefore, impacts would be restricted to these locations.

Vegetation management actions designed to protect and enhance coniferous forest, including old-growth, second-growth, and remnant stands, would provide potential roosting, feeding, and nesting habitat for the owl—a beneficial impact. The National Park Service would continue to monitor owl populations and survey potential habitat. Visitor use in the area would continue to disturb owls. Barred owls would also likely continue to invade preferred spotted owl habitats—an adverse impact. Ongoing actions to reduce human-created noise and light at Muir Woods National Monument would result in improvements to habitat conditions. Current actions to reduce barred owl use and nesting would help reduce adverse impacts on spotted owls. The primary threat to the northern spotted owl in the region would continue to be the loss of habitat—an adverse impact associated with increased urbanization of the region. Other threats include expansion in the range of the barred owl, West Nile virus, changes in habitat due to sudden oak death, and recreational pressure. Locally, in Muir Woods National Monument, the primary threat is from barred owls. Collectively, impacts on the northern spotted owl resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, minor, beneficial and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Marbled murrelet (Brachyramphus marmoratus marmoratus)—

Marbled murrelet surveys of Muir Woods National Monument have been completed, but no murrelets have been observed. Vegetation management actions designed to protect and enhance old-growth redwood forest at the monument would continue to provide suitable nesting locations for the murrelet—a beneficial impact. The primary threat to the marbled murrelet would continue to be the loss of nesting habitat and increased nest predation due to high corvid (i.e., crows and jays) densities—this would result in an adverse impact associated with increased urbanization of the region. Collectively, impacts on the marbled murrelet resulting from NPS actions that are part of the no-action alternative (the continuation of current management and trends) would be long term, minor, beneficial and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

TABLE 21. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF MUIR WOODS NATIONAL MONUMENT, NO-ACTION ALTERNATIVE

Species	Status	ESA Determination
Coho salmon, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus kisutch*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Steelhead trout, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus mykiss*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	"*may affect, not likely to adversely affect*"
Marbled murrelet (*Brachyramphus marmoratus marmoratus*)	Federal threatened; state endangered	"*may affect, not likely to adversely affect*"

Alternative 1: Connecting People with the Parks

Under alternative 1, a variety of management zones would be used that would assist in the protection of special status species. Approximately 91% of the monument would be zoned using the natural and sensitive resources zones.

Federal Threatened and Endangered.

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of some buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights area, removal of the upper asphalt parking lot at the entrance, and relocation of trails) under alternative 1 would improve water quality and habitat conditions–a beneficial impact. The construction of new facilities at Bridge 4 would affect water quality and instream habitat causing short-term, minor, adverse, localized impacts on salmonids due to construction and restoration activities. Collectively, impacts on coho salmon and steelhead trout resulting from alternative 1 would be long term, beneficial, minor, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term. Consultation for specific projects would occur as necessary.

Northern spotted owl (Strix occidentalis caurina)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of some buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights area and removal of the upper parking lot at the entrance) under alternative 1 would improve

resource conditions and integrity, which could result in an increase of suitable nesting habitat for spotted owls at Muir Woods National Monument. Impacts on the northern spotted owl would be long term, minor, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Marbled murrelet (Brachyramphus marmoratus marmoratus)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of some buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights area and removal of the upper parking lot at the entrance) under alternative 1 would improve resource conditions and integrity, which could result in an increase of suitable nesting habitat for the marbled murrelet at Muir Woods National Monument. Impacts on the marbled murrelet would be long term, minor, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

TABLE 22. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF MUIR WOODS NATIONAL MONUMENT, ALTERNATIVE 1

Species	Status	ESA Determination
Coho salmon, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus kisutch*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Steelhead trout, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus mykiss*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	"*may affect, not likely to adversely affect*"
Marbled murrelet (*Brachyramphus marmoratus marmoratus*)	Federal threatened	"*may affect, not likely to adversely affect*"

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Under alternative 2, a variety of management zones would be used that would assist in the protection of special status species. Approximately 99% of the monument would be zoned using the natural and sensitive resources zones.

Federal Threatened and Endangered.

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat throughout the monument, removal of the upper and most of the lower asphalt parking area, and the restoration of about 6,700 linear feet of Redwood Creek, including removal of the rock riprap, and its floodplain) under alternative 2 would improve water quality and habitat conditions. Water flow and floodplain function would be improved by removing or redesigning bridges that constrain floodplain function. Woody debris in the creek would increase as a result of restoring natural processes and would improve habitat structure and available nutrients to coho and steelhead. All of these activities would result in improvements to spawning and rearing habitat, resulting in a beneficial impact. There would be short-term adverse impacts from construction that would be outweighed by long-term habitat improvements. Collectively, impacts on coho salmon and steelhead trout resulting from alternative 2 would be long term, beneficial, moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term. Consultation for specific projects would occur as necessary.

Northern spotted owl (Strix occidentalis caurina)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat throughout the monument, removal of the upper and most of the lower parking lot at the entrance, and the restoration of the Redwood Creek and its floodplain) under alternative 2 would improve resource conditions and integrity, which could result in an increase of suitable nesting habitat for spotted owls at Muir Woods National Monument. Forage opportunities would likely improve as a result of these activities. The scale of beneficial impacts under alternative 2 is greater than under the no-action alternative. Impacts on the northern spotted owl under alternative 2 would be long term, minor to moderate, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Marbled murrelet (*Brachyramphus marmoratus marmoratus*)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat throughout the monument, removal of the upper and most of the lower parking lot at the entrance, and the restoration of the Redwood Creek and its floodplain) under alternative 2 would improve resource conditions and integrity, which could result in an increase of suitable nesting habitat for the marbled murrelet at Muir Woods National Monument. Forage opportunities would likely improve as a result of these activities. The scale of beneficial impacts under alternative 2 is greater than under the no-action alternative. Impacts on the marbled murrelet under alternative 2 would be long term, minor to moderate, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

TABLE 23. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF MUIR WOODS NATIONAL MONUMENT, ALTERNATIVE 2

Species	Status	ESA Determination
Coho salmon, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus kisutch*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Steelhead trout, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus mykiss*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	"*may affect, not likely to adversely affect*"
Marbled murrelet (*Brachyramphus marmoratus marmoratus*)	Federal threatened; state endangered	"*may affect, not likely to adversely affect*"

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Under alternative 3, a variety of management zones would be used that would assist in the protection of special status species. Approximately 85% of the monument would be zoned using the natural and sensitive resources zones.

Federal Threatened and Endangered.

Coho salmon, Central California Coast (Oncorhynchus kisutch) and steelhead trout, Central California Coast (O. mykiss)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights area, removal of the upper asphalt parking lot at the entrance, and relocation of trails) under alternative 3 would improve water quality and habitat conditions—a beneficial impact. Targeted, but limited, restoration of Redwood Creek would improve resource conditions and integrity, resulting in improvements to spawning and rearing habitat. Water flow and floodplain function would be improved by removing or redesigning bridges that constrain floodplain function. There would be short-term adverse impacts from construction and restoration that would be outweighed by long-term habitat improvements. Collectively, impacts on coho salmon and steelhead trout resulting from alternative 3 would be long term, beneficial, minor to moderate, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term. Consultation for specific projects would occur as necessary.

Northern spotted owl (Strix occidentalis caurina)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat in the Camino

del Canyon and Druid Heights area and removal of the upper parking lot at the entrance) under alternative 3 would improve resource conditions and integrity, which could result in an increase of suitable nesting habitat for spotted owls. Realignment of the Old Muir Woods Road would reclaim some of the owl's mapped foraging habitat. Targeted, but limited, restoration of Redwood Creek would improve resource conditions and integrity, resulting in potential improvements to nesting and foraging habitats. Visitor use would affect more areas of the monument under alternative 3, potentially increasing disturbance to individuals and potential owl nesting habitat, resulting in a long-term, minor, adverse, localized impact. Collectively, impacts on the northern spotted owl from alternative 3 would be long term, minor, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

Marbled murrelet (Brachyramphus marmoratus marmoratus)—

In addition to the impacts described under the no-action alternative, restoration activities (removal of buildings and reclamation of native habitat in the Camino del Canyon and Druid Heights area and removal of the upper parking lot at the entrance) under alternative 3 would improve resource conditions and integrity, which could result in an increase of suitable nesting habitat for the marbled murrelet at Muir Woods National Monument. Targeted, but limited, restoration of Redwood Creek would improve resource conditions and integrity, resulting in potential improvements to nesting and foraging habitats. Impacts on the marbled murrelet would be long term, minor, beneficial, and localized. The determination of effect under section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"

TABLE 24. POTENTIAL IMPACTS ON SPECIAL STATUS SPECIES OF MUIR WOODS NATIONAL MONUMENT, ALTERNATIVE 3

Species	Status	ESA Determination
Coho salmon, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus kisutch*)	Federal endangered; state endangered	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Steelhead trout, Central California Coast Evolutionarily Significant Unit (*Oncorhynchus mykiss*)	Federal threatened	"*may affect, likely to adversely affect*" for project specific actions in the short term, and "*may affect, not likely to adversely affect*" for land use and monument management over the long term
Northern spotted owl (*Strix occidentalis caurina*)	Federal threatened	"*may affect, not likely to adversely affect*"
Marbled murrelet (*Brachyramphus marmoratus marmoratus*)	Federal threatened; state endangered	"*may affect, not likely to adversely affect*"

CULTURAL RESOURCES – HISTORIC STRUCTURES, HISTORIC DISTRICTS, AND CULTURAL LANDSCAPES

No-action Alternative

Analysis. Under this alternative, the park would continue to manage Muir Woods National Monument as outlined in the 1980 General Management Plan. The no-action alternative would result in few changes to contributing features of historic structures, districts and cultural landscapes within the project area. The park would continue to stabilize, preserve, and rehabilitate the contributing historic structures and landscape features of this district in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*, though much of this work would be subject to funding availability.

Historic structures would continue to be preserved, rehabilitated, and maintained for use by park operations and visitor services. The primary arrival and entrance area would remain in the general location and condition as currently exists, with some improvements made for visitor services, access and circulation including shuttle drop-off and loading, pedestrian connections, and parking. Historic trails and roads, and other contributing landscape features, would be preserved and maintained. Efforts would be made to stabilize those landscape features that contribute to the historic district and whose condition is deteriorating. Overall, these ongoing preservation measures would result in a long-term, negligible to minor, beneficial impact and long-term, minor, adverse impact on contributing structures and landscapes of this historic district.

Dipsea Trail— The trail would be maintained and improvements would address erosion and natural resource issues resulting in long-term, minor, beneficial and adverse impacts.

Druid Heights— Historic buildings and landscape features would be stabilized to arrest any further loss of historic fabric, and preserved over time. This would result in a long-term, minor, beneficial and adverse impact. The national register eligibility of this property must be determined.

Hillwood Camp— Historic buildings and landscape features would be stabilized to arrest any further loss of historic fabric and preserved over time and continue to be adaptively reused. This would result in a long-term, minor, beneficial and adverse impact.

Conclusion. When combined with the effects of the actions common to all alternatives, the impact to historic structures and landscape resources in Muir Woods National Monument under the no-action alternative would be long-term, minor, beneficial and adverse. Under this alternative, the section 106 determination of effect on historic structures, districts, and cultural landscapes for Muir Woods National Monument, would be *no adverse effect*.

Alternative 1: Connecting People with the Parks

Analysis. Under this alternative, the park would enhance programs, facilities, and trails that access the redwood forest and connect communities to the park and surrounding open space. Significant historic structures and landscape features would be preserved and rehabilitated, with the introduction of some new compatible elements to accommodate these programs and enhance visitor experience. Changes would be made to the arrival and entrance area to the park; an off-site welcome center for the shuttle system, with parking and visitor services, would be an important feature under this alternative. The monument's existing entrance area would be redesigned to enhance the visitor's arrival experience, protect resources, and improve safety. A compatibly designed, modest arrival

facility would be provided and could include a shuttle stop, passenger drop-off/pick-up area, a sheltered waiting area, park orientation, restrooms, food service, and bookstore. Realignment of portions of Muir Woods Road would also be considered to improve its operational safety and visitor access. These changes to the arrival sequence and entrance area would result in long-term, minor, adverse impacts.

The park would continue to stabilize, preserve, and rehabilitate the contributing historic structures and landscape features of this district in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. The Administrative-Concession Building would be rehabilitated for interpretive, educational, and stewardship programs with the Superintendent's Residence, Garage, and Equipment Shed rehabilitated for park operations and administration. Nonhistoric structures would be removed. These actions would result in long-term, minor, beneficial and adverse effects. The future use of the Old Inn would be determined through more detailed site planning that would include an evaluation of its historic significance and integrity, and consider its reuse for visitor services or operational needs, or potential removal.

The park would maintain much of the present system of trails through the forest while some existing facilities and use areas, such as the entrance area and parking lots, would be modified or relocated. Historic trails and roads, and other contributing landscape features, would be stabilized, preserved and maintained, which would result in long term, minor, beneficial and adverse impacts on these landscape features. New elements would be introduced to the cultural landscape, such as compatibly designed, new restrooms and drinking water facilities near Bridge 4, resulting in long-term, minor, adverse impacts.

Dipsea Trail— The trail would be maintained and improvements would address erosion and natural resource issues resulting in long-term, minor, beneficial and adverse impacts.

Druid Heights— The majority of the Camino del Canyon and Druid Heights area would be managed to preserve and restore the natural setting. All nonhistoric structures would be removed and the main access drive converted to a trail. Due to the emphasis on natural resource management, it is anticipated that impacts on historic resources will be long-term, moderate, and adverse. The national register eligibility of this property must be determined.

Hillwood Camp— Camp Hillwood and its immediate surroundings would be rehabilitated and adaptively reused for day use and/or overnight educational programs. These uses would be compatible with the historic setting and their preservation would result in a long-term, moderate, beneficial, and long-term, minor, adverse impact.

Conclusion. When combined with the effects of the actions common to all alternatives, the impact to historic structures and landscape resources in Muir Woods National Monument under alternative 1 would be long-term, negligible to minor, beneficial, and long-term, minor to moderate, adverse. Under this alternative, the section 106 determination of effect on historic structures, districts, and cultural landscapes for Muir Woods National Monument, would be *adverse effect*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Under this alternative, the visitor experience would be more primitive than exists today, as the majority of the built environment would be removed. All visitors would arrive by shuttle, bicycle or on foot. Similar to alternative 1, an off-site welcome center for visitors would be developed and shuttle service would run year round to take visitors to the national monument. The park entrance would be relocated to the current

"annex" parking lot and designed to accommodate the shuttle operations. The existing arrival area, including the upper parking area and some of the lower parking lot, restrooms, and visitor center, would be removed to restore the natural setting.

To more fully restore the primeval character and natural conditions of the old-growth redwood forest, several historic buildings within the Muir Woods National Monument Historic District, such as the former Superintendent's Residence and its associated buildings and the Administration-Concession Building, as well as associated site features, would be removed. The Old Inn, which may be a contributing building to the historic district, would be retained for use by park administrative and limited maintenance operations. Where not in conflict with natural resource goals, historic trails and structures could be retained and adaptively reused. The historic trail system throughout the monument would be redesigned to a more pristine setting that emphasized natural resource preservation of the historic redwood groves (including the Redwood Forest, Bohemian Grove, and Cathedral Grove). However, many historic trails and bridges could be removed, relocated, or redesigned to enhance the natural resource conditions. Historic landscape features, such as the stone revetment erosion-control structures in Redwood Creek constructed by the Civilian Conservation Corps, would be removed for natural resource and floodplain system restoration.

In accordance with the proposed mitigation measures, prior to the removal of any national register-contributing or national register-eligible structure, appropriate recordation of the building would be prepared in accordance with section 110 (b) of the National Historic Preservation Act and the documentation submitted to the HABS/HAER/HALS program. Taken together, actions under this alternative that include the removal of historic buildings and landscape features that contribute to the district's national register status would result in a long-term, major, adverse impact.

Dipsea Trail— Under this alternative, a portion of the trail would be rerouted at the Redwood Creek crossing to reduce current impacts on adjacent natural resources. The balance of the trail would be maintained along its historic alignment. This would result in a long-term, minor, adverse impact.

Druid Heights— All structures and landscape features associated with this site would be removed and the area's natural habitat and drainage systems restored. In accordance with mitigation measures stipulated in this document, the site would be documented and recorded in accordance with appropriate HABS/HAER/HALS standards. This would result in a long-term, major, adverse effect.

Hillwood Camp— All structures and landscape features associated with this site would be removed and the area's native habitat and natural drainage systems restored. In accordance with mitigation measures stipulated in part 8 of this document, the site would be documented and recorded in accordance with appropriate HABS/HAER/HALS standards. This would result in a long-term, major, adverse effect.

Conclusion. When the actions of alternative 2 are combined with the effects of the actions common to all alternatives, the impact to historic structures and landscape resources in Muir Woods National Monument, as well as Druid Heights and Hillwood Camp, would be long-term, major, and adverse. Under this alternative, the section 106 determination of effect on cultural landscape resources in Muir Woods National Monument would be *adverse effect*.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Under this alternative, the park would present the monument as a contemplative outdoor museum for visitors to discover and learn about the primeval forest ecosystem (including the preserved redwood forest, and Bohemian and Cathedral Grove) and the monument's place in the history of the American conservation movement. Accordingly, the majority of historic structures and landscape features associated with those themes would be rehabilitated and adaptively used to support visitor programming and services.

Similar to alternative 1, an off-site shuttle system, with parking and visitor services, would be an important feature under this alternative. The monument's existing entrance area would be redesigned to enhance the visitor's arrival experience, protect resources, and improve safety. A compatibly designed, modest arrival facility would be provided and could include a shuttle stop, passenger drop-off / pick-up area, a sheltered waiting area, park orientation, restrooms, food service, and bookstore. Realignment of portions of Muir Woods Road and restrictions on shoulder parking would also be considered to improve operational safety and visitor access. These changes to the arrival sequence and entrance area would result in long-term, minor, adverse impacts.

Under alternative 3, historically significant buildings in the Muir Woods National Monument Historic District, such as the Administration-Concession Building and Superintendent's Residence and associated buildings, would be rehabilitated and adaptively used to support visitor programming and services. Nonhistoric additions would be removed. These actions would result in long-term, minor, beneficial and adverse impacts. The future use of the Old Inn would be determined through more detailed site planning that would include an evaluation of its historic significance and integrity and consider its reuse for visitor services or operational needs, or potential removal.

Historic trails and roads, and other contributing landscape features would be preserved and maintained; some new trails may be constructed to enhance visitor experience, but would be designed to be compatible with the historic setting. Relocation or redesign of some historic trails or segments of trails and the removal of selected portions of the erosion-control stone revetments in Redwood Creek constructed by the Civilian Conservation Corps would result in long-term, minor, adverse impacts because of the loss of historic features.

Dipsea Trail— The Dipsea Trail would be preserved and maintained and highlighted by park staff as an interpretive trail for visitors to understand the area's history. This would have a long-term, minor, beneficial and adverse impact.

Druid Heights— Under alternative 3, some historic structures and landscape features associated with the bohemian community at Druid Heights would be preserved. Camino del Canyon would be converted to a trail with access by foot or light service vehicle. These modifications would result in long-term, minor, adverse and beneficial impacts, depending on the extent of historic structure and landscape preservation work performed. The national register eligibility of this property must be determined.

Hillwood Camp— Some historic structures and landscape features could be preserved and rehabilitated when not in conflict with natural resource values and would have a beneficial effect. However, some buildings at Camp Hillwood could be removed, resulting in long-term adverse impacts of minor intensity. A segment of Conlon Avenue would be downgraded from its current road

status and realigned to improve drainage and natural processes for this tributary of Redwood Creek. Overall, these changes would result in a long-term, minor, beneficial and adverse impact due to the potential removal of some historic structures.

Conclusion. When combined with the effects of the actions common to all alternatives, the impact to historic structures and landscape resources in Muir Woods National Monument under alternative 3 would be long-term, minor, beneficial and adverse. Under this alternative, the section 106 determination of effect on historic structures, districts, and cultural landscapes for Muir Woods National Monument would be *no adverse effect*.

CULTURAL RESOURCES – ARCHEOLOGICAL RESOURCES

No-action Alternative

Analysis. Currently, there is little information available concerning precontact and historic archeological resources at Muir Woods National Monument. Comprehensive archeological surveys and consultation with American Indian tribes regarding archeological sites with ethnographic significance are needed. However, those known archeological resources, which include eight archeological sites associated with the Muir Woods National Monument Historic District as well as two isolated sites, are protected and preserved. Any additional sites identified through future inventories would also be protected. Without a comprehensive approach to archeological surveys and preservation; however, archeological resources may be subject to potential deterioration, lack of adequate protection in some cases, and possible loss of integrity from natural processes and/or inadvertent visitor activity. Actions under this alternative could have long-term to permanent, minor to moderate, adverse impacts on archeological resources.

Conclusion. Little information is available concerning precontact and historic archeological resources at Muir Woods National Monument. A comprehensive archeological survey and consultation with American Indian tribes are needed. Known archeological resources are protected and preserved as they become identified. Until a comprehensive survey is implemented, there is a potential for deterioration and lack of protection as a result of natural process and/or inadvertent visitor activity. Actions under this alternative could have long-term to permanent, minor to moderate, adverse impacts on archeological resources.

Under this alternative, the section 106 determination of effect on archeological resources would be *adverse effect*.

Alternative 1: Connecting People with the Parks

Analysis. Under this alternative, identified archeological resources, such as the eight archeological sites associated with the Muir Woods National Monument Historic District and two isolated sites, would be protected from unauthorized removal or other destructive activities. Modification or relocation of trails and existing facilities could affect the integrity of some archeological resources, but every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigation procedures would be undertaken in consultation with the California state historic preservation office.

This alternative would result in more opportunities to identify, evaluate, and provide stabilization, security, or other protection to archeological resources commensurate with their significance and sensitivity because the majority of the monument would be in the natural zone. In the diverse opportunities and scenic corridor management zones archeological resources would be stabilized and/or rehabilitated and incorporated into visitor opportunities, thus

enhancing their protection through increased awareness and understanding.

Although some archeological resources in the national monument could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Conclusion. Identified archeological resources would continue to be protected and preserved under this alternative. Generally, this alternative would result in more opportunities to identify, evaluate, and provide stabilization, security, or other protection to archeological resources because the majority of the monument would be in the natural zone. Archeological resources in the scenic corridor and diverse opportunities zones would be stabilized or rehabilitated and incorporated into visitor opportunities. Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Under this alternative, the section 106 determination of effect on archeological resources in Muir Woods National Monument would be *no adverse effect*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Identified archeological resources, such as the eight archeological sites associated with the Muir Woods National Monument Historic District and two isolated sites, would be protected from unauthorized removal or other destructive activities. Removal of much of the built environment, redesign of the monument's trail system, and restoration of natural processes could affect the integrity of some archeological resources, but every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigation procedures would be undertaken in consultation with the California state historic preservation office.

Because much of the monument would be in the sensitive resources zone under this alternative, archeological resources would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity.

Although some archeological resources could be lost (resulting in permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Conclusion. Identified archeological resources would continue to be protected and preserved under this alternative. Removal of much of the built environment, redesign of the monument's trail system, and restoration of natural processes could affect the integrity of some archeological resources. Because much of the monument would be in the sensitive resources zone under this alternative, archeological resources would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity.

Although some archeological resources could be lost (resulting permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Under this alternative, the section 106 determination of effect on archeological resources in Muir Woods National Monument would be *no adverse effect*.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Identified archeological resources, such as the eight archeological sites associated with the Muir Woods National Monument Historic District, would be protected from unauthorized removal or other destructive activities. Archeological surveys would be conducted to identify and evaluate the significance of other precontact and historic archeological resources in the monument, and determine appropriate ways to protect and preserve the sites while incorporating information of their contribution to the monument. Construction of new trails and relocation/redesign of others and restoration of some natural processes could affect the integrity of some archeological resources, but every effort would be undertaken to avoid known or discovered archeological sites. If such sites could not be avoided, mitigation procedures would be undertaken in consultation with the California state historic preservation office.

In the interpretive corridor management zone, which embraces the redwood groves and Redwood Creek area in this alternative, archeological resources might be incorporated into interpretive opportunities for visitors. Archeological resources in much of the rest of the monument (managed under the sensitive resources management zone) would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity.

Although some archeological resources could be lost in the national monument (resulting in permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Conclusion. Identified archeological resources would be protected and preserved. In the interpretive corridor zone, which embraces the redwood groves and Redwood Creek area, archeological resources might be incorporated into interpretive opportunities for visitors. Archeological resources in much of the rest of the monument (within the sensitive resources zone) would be identified, evaluated, and provided stabilization, security, or other protection commensurate with their significance and sensitivity.

Although some archeological resources could be lost in the national monument (resulting in permanent adverse impacts of minor intensity), these actions would generally result in long-term, beneficial impacts on archeological resources.

Under this alternative, the section 106 determination of effect on archeological resources in Muir Woods National Monument would be *no adverse effect*.

CULTURAL RESOURCES – ETHNOGRAPHIC RESOURCES / TRADITIONAL CULTURAL PROPERTIES

No-action Alternative

Analysis. The National Park Service has not formally evaluated any ethnographic resources or traditional cultural properties within the national monument. However, an ethnographic survey and assessment needs to be conducted.

Conclusion. There are no identified ethnographic resources or traditional cultural properties in Muir Woods National Monument.

Under this alternative, the section 106 determination of effect on ethnographic resources or traditional cultural properties would be *no resources or properties affected*.

Alternative 1: Connecting People with the Parks

Analysis. The National Park Service has not formally evaluated any ethnographic resources or traditional cultural properties within the national monument. However, an ethnographic survey and assessment needs to be conducted.

Conclusion. There are no formally evaluated ethnographic resources or traditional cultural properties in Muir Woods National Monument.

Under this alternative, the section 106 determination of effect on ethnographic resources or traditional cultural properties would be *no resources or properties affected*.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. The National Park Service has not identified any ethnographic resources or traditional cultural properties within the national monument. However, an ethnographic survey and assessment needs to be conducted.

Conclusion. There are no formally identified ethnographic resources or traditional cultural properties in Muir Woods National Monument.

Under this alternative, the section 106 determination of effect on ethnographic resources or traditional cultural properties would be *no resources or properties affected*.

Alternative 3: Focusing on National Treasures

Analysis. The National Park Service has not formally evaluated any ethnographic resources or traditional cultural properties within the national monument. However, an ethnographic survey and assessment needs to be conducted.

Conclusion. There are no formally evaluated ethnographic resources or traditional cultural properties in Muir Woods National Monument.

Under this alternative, the section 106 determination of effect on ethnographic resources / traditional cultural properties would be *no resources or properties affected*.

CULTURAL RESOURCES–PARK COLLECTIONS

The alternatives for Muir Woods National Monument's park collections are covered under the environmental consequences in the "Actions Common to All Actions Alternatives" section and by each alternative for Golden Gate National Recreation Area.

VISITOR USE AND EXPERIENCE

No-action Alternative

Analysis. The primary visitor activities of hiking through the redwood forest and enjoying the sights and sounds of Muir Woods National Monument would continue in this alternative. The existing interpretive programs would also continue. In addition, visitors would still have some opportunities for self-guided exploration, which is a valued characteristic of visiting the monument. During scoping for the plan, there were some mentions of additional recreation opportunities that were desired including more trail access to the Camino del Canyon area and with connections to the surrounding state park lands. In this alternative, the Camino del Canyon area would remain largely inaccessible to most visitors and no additional trail connections would be established with adjacent public lands. Visitors have also expressed interest in more diverse interpretive programs and this alternative would not include additional programming or educational facilities to support programming. The lack of some of

these desired improvements would be a long-term, moderate, adverse impact on those visitors seeking these opportunities.

The monument continues to provide some opportunities for solitude, quiet, and connection with the primeval forest. These characteristics of park visitor opportunities are highly valued by the public. This alternative would continue to promote these values, including encouraging modification of visitor behavior through strategies such as quiet zones and quiet days to minimize impacts on the natural soundscape. However, a large number of visitors have expressed concerns about the amount of noise and crowding that still occurs during peak times, especially when groups are present in the woods.

Visitors would continue to have access to the monument via private automobile as well as the park shuttle during the peak season. The shuttle has improved access options to the monument and eased some of the congestion on surrounding access roads, a long-term, moderate, beneficial impact. However, there is still concern about the amount of informal parking that is occurring at the monument and the amount of congestion from vehicles, buses, and pedestrians competing for the same space at the monument entrance. These issues result in a long-term, moderate, adverse impact on visitor experience.

Visitor safety at the monument is considered to be good in the no-action alternative, except for the safety concerns associated with informal parking along the entrance road during peak visitation. The real and perceived safety problems associated with informal parking will continue in this alternative resulting in a long-term, minor, adverse impact.

Conclusion. The no-action alternative would result in long-term, minor to moderate, beneficial impacts from continued opportunities to experience the unique and highly valued characteristics of the primeval forest via hiking trails and educational programs. These activities and experiences are highly valued by visitors. However, minor to moderate adverse impacts on visitor experience from visitor crowding, noise, and informal parking during peak times would continue.

Alternative 1: Connecting People with the Parks

Analysis. Alternative 1 would provide for self-guided exploration in a natural park setting while making connections to a wider array of opportunities on adjacent public lands. Some additional programming and enhanced facilities would give visitors new means to understand the conservation history and primeval forest ecosystem. Additional trail and overnight opportunities in the Camino del Canyon area would also allow for new visitor opportunities. All of these actions would expand the range of activities for visitors and allow them to better understand the important stories of the monument. These actions would provide visitors with a long-term, minor to moderate, beneficial impact on their use and experience.

The monument would continue to welcome a diversity of visitors and support a range of recreation activities. New recreation activities would largely be focused on new interpretive, educational, and stewardship activities that would be staged at the Administration-Concession Building and in the Camino del Canyon area. Also, visitors would be introduced to ways of accessing adjacent landscapes and recreational opportunities of surrounding public lands, creating a more seamless connection to the diversity of day and overnight recreation opportunities in the surrounding area.

Visitors would be provided a variety of programs and opportunities in exploring the natural and conservation themes throughout the monument, appealing to many learning styles and increasing the breadth of stories being told. Interpretation on the shuttle bus would orient visitors and allow them to better

plan their visit. Expanded structured educational opportunities by park staff and partners would also add to the learning opportunities available to visitors. This would include new overnight educational opportunities in the Camp Hillwood area. Improved learning opportunities were highly desired by some members of the public. These added interpretive and educational programs would have a long-term, minor to moderate, beneficial effect on visitor experience.

Alternative 1 would allow visitors improved access to the monument during peak times by providing increased shuttle service and more convenient shuttle stops. The increased shuttle access to the woods would reduce traffic congestion at the park entry, minimizing visitor frustration and conflicts on arrival. However, some visitors may experience adverse effects if they are not able to board the shuttle in a timely manner. Visitors who would prefer to park at the monument to maintain flexibility in their schedule would also be adversely affected by the proposed reduction in parking at the monument. Within the monument, visitor access would be improved and congestion reduced through greater dispersion of visitors, new facilities, and accessible trails. This would include upgrades to trails for purposes of accessibility and resource protection, along with water and restroom facilities at Bridge 4. These actions would result in long-term, moderate, beneficial impacts.

The monument's natural setting and its primary natural resource would be enhanced by reconfiguring parking away from the entrance to the primeval redwood forest and restricting parking along the road to the monument. Pulling vehicle circulation away from the monument would also improve the natural soundscape. Implementation of a quiet zone would allow visitors to understand the value that is placed on the natural quiet of the forest and encourage visitors to help provide a quiet and contemplative experience for all. These actions would have a long-term, moderate, beneficial impact on the visitor experience at Muir Woods National Monument.

Because of the efforts made to improve the safety of the circulation system and parking at the monument, visitor safety would be improved. The potential for pedestrian and vehicular conflicts would be reduced as well as conflicts between vehicles.

Conclusion. Under alternative 1, impacts on visitor experience would be long term, minor to moderate, and beneficial. The improvements to the arrival experience to the park, along with enhanced educational and interpretive opportunities, directly address the primary interests and concerns of most visitors to the monument. It is likely that a similar number of visitors could be accommodated in this alternative while still meeting desired conditions given the ability to better disperse and manage visitation on the park shuttle and trails, a long-term minor beneficial impact.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Alternative 2 would restore the primeval character of the old-growth forest and the visitor experience would be more primitive than it is today. The majority of the built environment would be removed and only light-on-the-land trails would reach into the heart of the forest. While the range of activities would be limited, the experience of the primeval forest would be heightened, benefiting visitors who are interested most in the natural ecological processes of the forest and creek.

Visitors would still have opportunities to enjoy the primary recreation activity of the monument, hiking through the forest. The experience along the trail setting would be improved with fewer encounters with others and more emphasis on connection with the surrounding natural environment. Visitors would also have opportunities for educational and stewardship programs

focused on exploring the redwood forest ecology and the conservation of Muir Woods National Monument. Participatory programs would encourage a deeper and more meaningful understanding of the forest. Interpretation on the shuttle bus would orient visitors and allow them to better plan their visit. This alternative provides a different visitor experience than the no-action alternative. If managed well, alternative 2 could result in a long-term, moderate, beneficial impact to visitor experience, with visitors enjoying a more hands-on interaction with the primeval redwood forest.

The full-time shuttle access to Muir Woods National Monument will reduce traffic congestion at the park entry, minimizing visitor frustration and conflicts on arrival; a long-term, moderate, beneficial impact. However, there would be long-term, moderate, adverse effects for those that cannot get on the shuttle in a timely manner. Some visitors who would prefer to park at the monument would also be adversely affected by the substantial reduction in parking. Additionally, the restriction on tour bus access would make access for tour groups less convenient.

The park setting would be restored to a more naturalistic setting, with few indications of built structures. All structures would be moved out of the woods, giving visitors more natural viewscapes and soundscapes. The removal of all parking except for a small accessible lot would increase the naturalness of the arrival area to Muir Woods National Monument. It also would reduce the noise and pollution caused by personal vehicles and tour buses.

Because of the efforts made to improve the safety of the circulation system and parking at the monument, visitor safety would be improved. The potential for pedestrian and vehicular conflicts would be reduced as well as conflicts between vehicles. The increased rustic nature of the trail system may slightly increase the potential for safety incidences, a potential adverse impact.

Conclusion. Alternative 2 would result in long-term, minor to moderate, beneficial impacts on visitor experience, primarily due to enhancements to the monument's natural setting and the promotion of a more authentic and connected visitor experience with the primeval forest. However, long-term, minor to moderate, adverse impacts on visitor experience would also occur because some visitors would likely find it challenging to visit given the lack of parking and support facilities, and the increased regulation of visitor access. Also, it is likely that alternative 2 would not further encourage use of the monument by diverse groups given more limited visitor opportunities and services. It is likely that a smaller number of visitors could be accommodated in this alternative given more limited facilities and the emphasis on fewer visitor encounters in the woods, a long-term, minor, adverse impact.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Alternative 3 is the NPS preferred alternative and would present Muir Woods National Monument as a contemplative outdoor museum where visitors would explore and understand the primeval forest and the monument's place in U.S. conservation history. Visitors would have greater diversity of recreational opportunities, along with multiple types of educational and stewardship opportunities provided to reach a more diverse audience with various learning styles.

Existing recreation activities would largely continue, along with the addition of thematic trails within the heart of the woods. There would also be new trail opportunities in Camino del Canyon. Other new opportunities would involve increased stewardship and educational programs that allow visitors first-hand experience in the

"living museum" of the monument. The use of the Administration-Concession Building in the woods for expanded programs and research would allow a wider range of recreation and learning opportunities. The park staff would be focused on facilitating improved understanding of park values to a broad audience. New and diverse learning opportunities were highly desired by some members of the public. Investment in new and comprehensive onsite interpretive and educational programs would expand the visitor opportunities and understanding of the monument's resources and thereby effect long-term, moderate, beneficial impacts on visitor experience.

The preferred alternative would allow visitors improved access to the monument during peak times by providing increased shuttle service and more convenient shuttle stops. The increased shuttle access to Muir Woods National Monument would reduce traffic congestion at the park entry, minimizing visitor frustration and conflicts on arrival—a long-term, moderate, beneficial impact. However, there would be long-term, moderate, adverse effects for those that cannot get on the shuttle in a timely manner. Some visitors who would prefer to park at the monument would also be adversely affected by the partial reduction in parking.

Within the monument, visitor access would be improved and congestion reduced through the redesigned arrival area and greater dispersion on thematic trails. Camp Hillwood would be used for park operations or more limited visitor programs and thereby restrict the existing limited opportunity for group overnights.

Viewsheds and soundscapes at the monument would be improved in the preferred alternative. Visitors would experience a more natural setting upon arrival at the monument as a result of the reconfiguration of the parking lots. Dispersal of visitors among thematic trails and within the Camino del Canyon area would improve both the soundscapes and viewsheds as fewer people would be in any one place at any one time. Soundscape management practices would also improve the soundscape. Overall, these actions would have a long-term, moderate, beneficial impact to visitor experience.

Because of the efforts made to improve the safety of the circulation system and parking at the monument, visitor safety would be improved. The potential for pedestrian and vehicular conflicts would be reduced, as would the potential for conflicts between vehicles.

Conclusion. Actions proposed in the NPS preferred alternative would result in long-term, minor to moderate, beneficial impacts on visitor experience. This alternative contributes to the purpose of the monument by providing high-quality recreation and education opportunities that welcome a wide audience to experience and understand the most important resources and stories of Muir Woods National Monument. It is likely that a reasonably large number of visitors could be accommodated in this alternative while still meeting desired conditions, given the ability to better disperse and manage visitation on the park shuttle and trails, a long-term, minor, beneficial impact.

SOCIAL AND ECONOMIC ENVIRONMENT

No-action Alternative

Analysis. As detailed in the "Social and Economic Environment" section of part 8, park lands such as Muir Woods National Monument are integral in sustaining a high quality of life in a highly urbanized community such as the Bay Area. The no-action alternative for the national monument would continue to provide open space, a wildland experience, and public access, while maintaining a nationally significant natural resource. As other Bay Area private land continues to develop and urbanize into the

future, Muir Woods National Monument will become exponentially more valuable to the community and its quality of life. The education and stewardship opportunities for the residents would be maintained and possibly improved as resources become available, which would continue to enhance the quality of life for local residents by fostering a conservation ethic among them. Under the no-action alternative, the National Park Service would also continue to collaborate with other local land managers to maintain its "watershed approach" to land management. This would maintain a communitywide and perhaps regionwide effort for wildland protection, which ultimately would benefit the quality of life for local residents. This collaboration would also continue to improve community awareness and engagement in park and regional issues. Collectively, these effects to qualify of life result in an impact that is long term, moderate, and beneficial in the context of the gateway communities in Marin County, and long term, minor, and beneficial for the three adjacent counties.

In terms of effects on the local economy, the no-action alternative for Muir Woods National Monument would maintain the current level of employment for the National Park Service and concessioners and NPS spending for park operations and contracts. The value of these attributes to the local economy is discussed in "Social and Economic Environment" of the "Affected Environment" section. The no-action alternative would result in a negligible change from current conditions in impact to the local economy in the future. However, as with all other alternatives, the no-action alternative would maintain Muir Woods National Monument's overall intrinsic contribution to the local economy in the Bay Area. By continuing to provide open space preservation, recreation opportunities, and an aesthetic natural backdrop, the national monument would continue to help make the Bay Area a place for companies and talented professionals to call home. In other words, the Bay Area's quality of life becomes a draw for business and economic growth with the help of places like Muir Woods National Monument. The no-action alternative will sustain and enhance this economic value to the Bay Area. This results in an impact that is long term, moderate, and beneficial in the context of local gateway communities in Marin County. The impact would be long term, minor to moderate, and beneficial for the adjacent three counties.

Conclusion. In the context of the local gateway communities and the three adjacent counties, the beneficial impacts on the social and economic environment from the no-action alternative would be long term and minor to moderate. The beneficial impacts could result from maintaining the park's contribution to the local economy and quality of life, existing education and stewardship programs, as well as maintaining collaborative efforts with several local governments and land managers to maintain and expand open land protection in the region.

Alternative 1: Connecting People with the Parks

Analysis. Alternative 1 would maintain the quality of life and economic benefits that the national monument provides to the local communities and counties, as described in the analysis of the no-action alternative. By providing open lands adjacent to a large urban center and continuing education and stewardship programs for local residents, the monument would continue to improve the quality of life for those in nearby communities. This alternative would also sustain the monument's intrinsic contribution to the local economy in the Bay Area (once again, as noted in the no-action alternative analysis). By continuing to provide open space preservation, recreation opportunities, and an aesthetic natural backdrop, the national monument would continue to help make the Bay Area a place for companies and talented professionals to call home. These contributions to the local economy and quality of life would result in an

impact that is long term, moderate, and beneficial in the context of local gateway communities in Marin County. The impact would be long term, minor to moderate, and beneficial for the adjacent three counties.

In addition to continuing these attributes of the no-action alternative, the public outreach, welcoming, and orientation focus of alternative 1 would contribute more to the quality of life of many residents in the area. Improved orientation, outreach, and support facilities that would be aimed at reaching the diverse populations of the Bay Area could connect with local residents and promote more awareness of the monument. Also, this alternative includes an improvement in park accessibility via an expanded shuttle bus service that would contribute to an improved quality of life in the community by allowing more local residents to access the park (e.g., those without personal vehicles), and by reducing traffic congestion on local and regional roads. All of these efforts would improve the quality of life of more residents by exposing them to the health, education, and recreation benefits of visiting Muir Woods National Monument and other park sites. This could result in an impact that is long term, minor to moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

In addition, alternative 1 includes a variety of construction projects that would support the local economy by offering new contract work for local and regional firms. Most of these park projects would be associated with the improved visitor welcoming facilities that would complement the NPS effort at welcoming and orienting people at Muir Woods National Monument. These projects would generate new contract work for private firms in the Bay Area, including engineering consultants, construction contractors, and environmental consultants. These projects would not only support these contracting businesses and their employees directly, but the economic multiplier effect would circulate this contract money through the local economy. This phenomenon is explained in "Social and Economic Environment" under the "Affected Environment" section. The collective result of these actions would be impacts that are short term, minor, and beneficial for local gateway communities and possibly the three adjacent counties.

The need for some new NPS or concession staffing may also be generated at the new welcome centers to provide new visitor services. The expanded shuttle bus services could also generate additional concession jobs. These new jobs may result in an impact that is long term, minor, and beneficial to the local gateway communities in Marin County. Impacts on the three adjacent counties would be negligible.

Conclusion. The overall beneficial impact to the quality of life and local economy from alternative 1 would be short term to long term, and range from minor to moderate for the local gateway communities and the three adjacent counties. The beneficial impacts would primarily result from

- a significant increase in public outreach programs, visitor orientation, and new welcoming facilities at the park;
- improved connections to local and regional transportation systems and less traffic congestion in the community;
- various new engineering and construction contracts for facility improvement projects; or
- job creation from the proposed increase in visitor services in the park and the shuttle service expansion.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. Alternative 2 would maintain many of the quality of life and economic benefits that the national monument provides to the local communities and counties, as described in the analysis of the no-action alternative. By

providing open lands adjacent to a large urban center and continuing education and stewardship programs for local residents, the monument would continue to improve the quality of life for those in nearby communities. This alternative would also sustain the monument's intrinsic contribution to the local economy in the Bay Area (once again, as noted in the no-action alternative analysis). By continuing to provide open space preservation, recreation opportunities, and an aesthetic natural backdrop, the national monument would continue to help make the Bay Area a place for companies and talented professionals to call home. These contributions to the local economy and quality of life would result in an impact that is long term, moderate, and beneficial in the context of the local gateway communities in Marin County. The impact would be long term, minor to moderate, and beneficial for the adjacent three counties.

Because alternative 2 places a priority on ecological restoration, recreational opportunities in the park may be somewhat reduced for local residents. This may slightly reduce the amount of exercising, learning, and/or recreating in the local communities. However, given the availability of other park sites in the immediate proximity of Marin County, this adverse impact to quality of life would likely be negligible and localized.

Alternative 2 includes a considerable change in park accessibility. The proposed shuttle bus program will contribute to an improved quality of life by allowing more local residents to access the park (e.g., those without personal vehicles), and by reducing traffic congestion on local and regional roads in Marin County. This transportation change may result in an impact that is long term, minor, and beneficial for the local gateway communities in Marin County. The impact to the overall three adjacent counties would likely be negligible.

The focus on restoration of habitat connections may increase opportunities and reasons for local government land managers to preserve land in vicinity of the national monument (to establish public land connections and reduce further habitat fragmentation). If the adjacent local land managers pursue additional open space around Muir Woods in Marin County, the local residents of the area may have additional park sites to visit in the future. This would enhance the quality of life for residents of the area. The impact would be long term, minor, and beneficial for the local gateway communities. Impact to the adjacent three counties would be negligible.

As for impacts on the local economy, because alternative 2 focuses on preserving ecological resources, several actions in this alternative aim at restoring and reclaiming natural features in and around Muir Woods National Monument. These reclamation efforts would necessitate various types of construction and restoration projects that would support the local economy by offering new contract work for local and regional firms (including engineering consultants, construction contractors, and environmental consultants). These projects would not only support these contracting businesses and their employees directly, but the economic multiplier effect would circulate this contract money through the local economy. This phenomenon is explained in part 3, in the "Social and Economic Environment" under the "Affected Environment" section. The collective result of these actions would be impacts that are short term, minor, and beneficial for local gateway communities and possibly the three adjacent counties.

Some new NPS or concession staffing may be generated by the substantial expansion to shuttle service to the park. These new jobs may result in an impact that is long term, minor, and beneficial to the local gateway communities in Marin County.

Conclusion. The beneficial impacts on the quality of life and local economy from alternative 2 would be short term to long term and minor for the local gateway

communities and the three adjacent counties. The beneficial impacts could result from

- increased cooperation with other local governments and land managers to pursue the preservation of additional publicly accessible lands in the area,
- contract work created by various reclamation projects,
- possible new jobs created by the substantial expansion in the shuttle service that serves the park, or
- the expanded shuttle service that would allow more local residents to access the park and reduce traffic congestion.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. Alternative 3 would maintain the quality of life and economic benefits that the national monument provides to the local communities and counties as described in the analysis of the no-action alternative. By providing open lands adjacent to a large urban center and continuing education and stewardship programs for local residents, the monument would continue to improve the quality of life for those in nearby communities. This alternative would also sustain the monument's intrinsic contribution to the local economy in the Bay Area (once again, as noted in the no-action alternative analysis). By continuing to provide open space preservation, recreation opportunities, and an aesthetic natural backdrop, the national monument would continue to help make the Bay Area a place for companies and talented professionals to call home. These contributions to the local economy and quality of life would result in an impact that is long term, moderate, and beneficial in the context of the local gateway communities in Marin County. The impact would be long term, minor to moderate, and beneficial for the adjacent three counties.

Alternative 3 for Muir Woods National Monument includes actions that provide some new visitor information and orientation, as well as interpretation programs that would be aimed at attracting the diverse populations of the Bay Area to the park. The attempts to connect with local residents would be complemented with improved visitor welcoming center facilities at Muir Woods National Monument access points. In addition, alternative 3 includes an improvement in park accessibility via an expanded schedule of shuttle bus connections with local and regional transportation systems. The shuttle bus program could contribute to an improved quality of life by allowing more local residents to access the park (e.g., those without personal vehicles), and by reducing traffic congestion on roads in Marin County. Collectively, these efforts could improve the quality of life of more Bay Area residents by exposing them to the health, education, and recreation benefits of visiting Muir Woods National Monument and other park sites. This could result in an impact that is long term, minor to moderate, and beneficial in the context of the local gateway communities and three adjacent counties.

Alternative 3 places a strong emphasis on the national significance of Muir Woods National Monument (natural and historical) and educating the public on this significance. As the residents of Marin County and the Bay Area as a whole become more aware of the uniqueness and importance of Muir Woods National Monument, they may develop a stronger sense of pride or identity in the community in which they live. These personal appreciation values and sense of community belonging can contribute to one's quality of life. This identification with the unique resources of the community may yield an impact that is long term, minor, and beneficial in the context of the local gateway communities and three adjacent counties.

Conclusion. The beneficial impacts of alternative 3 on the quality of life and local economy could be long term, ranging from

minor to moderate for local gateway communities and the three adjacent counties. Overall, the beneficial impacts of alternative 3 could result from

- a moderate increase in public outreach, visitor orientation, and new welcoming facilities at the park,
- improved connections to local and regional transportation systems and less traffic congestion in the community,
- a modest number of possible jobs created by expanded visitor welcoming services and expanded shuttle service, or
- the community's improved awareness, pride, and appreciation of the national significance of Muir Woods National Monument.

TRANSPORTATION

The analysis of transportation impacts in this section is based in part on several earlier studies, including:

- four years of studies of the Muir Woods Shuttle pilot program conducted for the County of Marin (Nelson\Nygaard 2008b)
- the "Muir Woods Shuttle Alternatives," a memo to park managers (Nelson\Nygaard 2008a)
- the Comprehensive Transportation Management Plan (NPS and Marin County 2002)
- the Transportation Planning to Address Access and Congestion Issues – Muir Woods National Monument

No-action Alternative

Analysis. Currently, about 760,000 visitors per year travel to Muir Woods National Monument. Visitation peaks during the summer months, particularly on weekends. Managing these crowds and balancing the impact of the large number of visitors with the preservation of the park resources has been an ever-increasing challenge for park managers.

Muir Woods is reached by narrow two-lane county and state roads that wind through canyons and over Mount Tamalpais. There is little opportunity for passing, thus the roads are heavily congested on busy summer weekends, particularly on State Route 1 between Highway 101 and Panoramic Highway. Marin County is committed to keeping roads in West Marin at two lanes to preserve the rural character of the area, so reducing congestion through increased capacity is not a realistic option.

Most visitors arrive at Muir Woods National Monument by automobile. The monument provides 179 parking spaces in three parking lots, supplemented by approximately 175 spaces along Muir Woods Road. Estimated demand for parking spaces on peak season weekends in 2002 was 450 spaces (NPS and Marin County 2002), a figure that exceeds the formal and informal parking capacity. Parking on the roadway often has extended to areas where parking is prohibited and there is minimal enforcement. Marin County has recently restricted some of the shoulder area with fences and signs, slightly reducing the number of available spaces. On busy weekends, cars can be found parked along the road up to a mile from the monument. This can create safety issues because people walk in the road to get to the monument, and the parked cars make the navigable roadway narrower while also obscuring the view of pedestrians and oncoming traffic.

A shuttle system connecting off-site parking lots with Muir Woods National Monument was introduced in the summer of 2005. This was originally a three-year pilot program; now the National Park Service has entered into a three-year partnership with the County of Marin to jointly fund the service from 2009 through 2011 with the objective of continuing

the service into the future indefinitely. The shuttle runs on weekends and holidays from May through September and has gradually increased hours of service each year. Passengers board the shuttle in Sausalito, in Marin City, or from two Park-and-Ride lots in Mill Valley. These satellite parking lots are more than adequate to accommodate cars of shuttle riders on the weekends. More than half of shuttle riders choose to take the shuttle because of changeable message signs on Highway 101 informing them that the lot at Muir Woods is full and directing them to a shuttle stop.

Data gathered during the 2008 season shows that 14% of visitors to Muir Woods National Monument took the shuttle on days when the shuttle was available (Nelson/Nygaard 2009).

Ridership has grown substantially each year of service, increasing farebox revenue and sometimes requiring additional vehicles for the mid-day rush peak use period, and at the end of the day. Even with this large number of riders, roads continue to be heavily congested with visitors arriving by auto, such that the shuttle is thrown off schedule during peak periods as it waits in traffic.

In addition to the Muir Woods Shuttle, park staff estimates that 20% of visitors arrive by tour bus (pers. comm. with Mia Monroe, NPS 2009).

Conclusion. With no further action taken, visitor connections to Muir Woods National Monument and the functionality of the transportation system to the monument could experience a long-term, minor to moderate, adverse impact. Access roads and intersections on State Route 1 between Highway 101 and Muir Woods National Monument would continue to be congested, slowing shuttle service, and making it difficult at peak times for emergency vehicles to travel in the area. The existing parking lots at the monument are likely to continue to fill early in the day from May to September, particularly on the weekends and the unsafe roadside parking situation could also continue. On a positive note, shuttle service can be expected to see continued increases in ridership, helping reduce road congestion.

All of the Action Alternatives

Analysis. Recognizing the difficulty of accommodating the large number of visitor vehicles, all alternatives move toward reducing the number of cars coming to the monument and increasing the proportion of visitors coming by transit. This latter objective is accomplished by both increasing transit service and by intercepting travelers earlier in their trip so that more, if not all, of the trip is on transit rather than by car. The following transportation-related measures are incorporated in alternatives 1 through 3 for Muir Woods National Monument. Although described independently, they should be considered parts of a whole strategy to be implemented in conjunction with each other.

In alternatives 1 and 2, a new off-site welcome center would be created in the vicinity of State Route 1 and Highway 101 where visitors would board the shuttle. The center would provide parking, shelter, restrooms, park information, and snacks, and would be a transfer point between regional and local transit and national park destinations. The creation of the welcome center would have a long-term, major, beneficial impact on transit facility capacity, amenities, conditions, and on unsafe road shoulder parking on Muir Woods Road near the monument.

Express transit service from downtown San Francisco and improved connections with the regional ferry services would be pursued. This action is likely to result in a long-term, moderate, beneficial impact to connectivity to Muir Woods, including number and capacity of connections, and available modes of travel.

In alternatives 1 and 3, shuttle service would be provided during shoulder periods (May and September) and peak periods (Memorial

Day through Labor Day weekends), as well as on holiday weekends throughout the year. This would have a long-term, moderate, beneficial effect by making transit service available on holidays during the nonpeak period. In alternative 2, service would run 365 days a year, which is likely to have a long-term, major, beneficial impact on transit availability and an increase in modes of travel to Muir Woods National Monument.

Parking at the monument would be reduced in alternatives 1 and 3 and eliminated (except for space needed for those with special accessibility needs) in alternative 2. Impacts of this are multidimensional and are discussed below.

In all action alternatives, a main feature would be a reduction in or elimination of parking capacity at the monument (including unsafe road shoulder parking), offset by parking at one or more satellite lots (possibly including Kent Canyon), and increased shuttle service. Parking at the off-site shuttle lots would accommodate autos, while other lots in the vicinity may also be available to accommodate visitors' cars. Some of the satellite parking lots are also used by commuters during the week, so these may not be available for shuttle passengers during that time unless other changes increase capacity. By shifting the majority of visitors to the shuttle and the San Francisco Express service, automobile congestion on local roads would be expected to be reduced.

Taking the place of driving to the Muir Woods National Monument would be increased shuttle and transit service. The transit service would be the logical primary mode of access for monument visitors because the potential for increased access by bicycle, on foot, or by tour bus is limited. Continued reasonably convenient access is essential to maintain (and if possible, enhance) a high-quality visitor experience.

The overall impacts of these measures would likely be long term, moderate to major, beneficial on the functionality and safety of the transportation system, with a moderate to major increase in transit access from San Francisco, the Sausalito Ferry, and other points in southern Marin County. There would be an increase in access by land- and water-based regional transit, increased number and capacity of connections, and an increase in the available modes of travel. These measures could result in a long-term, major, beneficial impact on connections, transit service availability, and transportation facility capacity and amenities.

There would be a major, adverse impact on parking availability at the monument, offset to a large degree by parking availability at off-site lots and increased transit. Visitors are still likely to arrive by car from points west of the monument, which means that they would have no opportunity to park and take transit. These visitors would be most affected by the lack of parking, and their ability to visit the monument would be adversely affected.

Conclusion. There would be a major, adverse impact on parking availability at the monument, offset to a large degree by parking availability at off-site lots and increased shuttle and transit service. Visitors are still likely to arrive by car from points west of the monument, which means that they would have no opportunity to park and take transit. These visitors would be most affected by the lack of parking, and their ability to visit the monument would be adversely affected.

Establishing permanent shuttle services with an off-site parking area and increasing transit from both the Sausalito Ferry and San Francisco to Muir Woods National Monument would have a long-term, moderate to major, beneficial impact on the transit system serving the monument. Reducing parking at the monument is also likely to have a long-term, moderate to major, adverse impact on parking availability for visitors.

Alternative 1: Connecting People with the Parks

Analysis. In addition to the actions common to all alternatives, alternative 1 includes the following transportation-related actions for Muir Woods National Monument. It should be noted that the transportation measures in alternative 3 are identical to those in alternative 1.

The monument's existing entry area would be redesigned. Pedestrian access would be improved by separating pedestrians from roads and parking. A modest facility would be provided to receive visitors arriving by different modes of transportation including the shuttle. The entry area might include such services as restrooms, orientation and information, food service, and sheltered areas for passengers waiting for buses. This measure may have a long-term, moderate, beneficial impact on transit facility capacity, amenities, and conditions, encouraging and supporting use of the shuttle.

In order to improve pedestrian safety and protect Redwood Creek, the monument would collaborate with Marin County to restrict shoulder parking along Muir Woods Road in nontrailhead areas when sufficient transit is available to meet visitation demand.

Parking in the monument lots and on the road shoulders would be reconfigured or relocated using sustainable design practices to reduce impacts on the creek and other sensitive resources. Parking would be decreased by an estimated 33% (primarily from a reduction in road shoulder parking); capacity would meet demand during the off–season. This is likely to have a long-term, minor, adverse impact on parking availability during those times when the shuttle is not running, and a long-term, minor, beneficial impact on pedestrian access.

Data from the *Comprehensive Transportation Management Plan* for park lands in southwestern Marin indicates that off–seasons and shoulder season typical weekday parking demand at the monument ranges between 115 and 155 spaces. By 2023, this is projected to increase to 135 to 190 spaces. A 33% reduction in parking supply, or removing 117 spaces, would leave 265 spaces; this would be more than adequate to meet parking demand during those times when the shuttle would not be operating (weekdays during the shoulder and off–season months). This assumes that the current supply includes 179 spaces in the parking lots and an estimated 175 spaces on the shoulders of the road totaling 354 spaces.

The following table shows estimated parking demand for 2002 and 2023 using data from the *Comprehensive Transportation Management Plan*.

With removal of some parking and an increase in shuttle service, parking demand would be shifted to off-site lots in the vicinity of State Route 1 and Highway 101. The off-site shuttle services (in all alternatives) could provide parking, shelter, restrooms, park information, snacks, etc., for shuttle riders. In addition, the existing transit hub in the vicinity of State Route 1 and Highway 101 could continue to serve as a shuttle intercept facility, and if so, could accommodate cars of shuttle riders. These lots, normally used by weekday commuters, would not be able to accommodate large numbers of monument visitors during the work week without some reconfiguration. Turnover in these lots would be slower than turnover in the current monument lots because parking duration would include both the time visiting the monument and the travel time to and from the monument. Detailed analysis of this and other potential locations would be the subject of a separate planning effort.

TABLE 25. PARKING DEMAND AT MUIR WOODS NATIONAL MONUMENT, 2002 AND 2023

Existing Parking Demand (2002)					
Peak Season (Memorial Day through Labor Day weekends)		Shoulder Season (May and September)		Off–Season (October 1 to May 1)	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
380	450	155*	300	115*	250
Projected Parking Demand (2023)					
Peak Season (Memorial Day through Labor Day weekends)		Shoulder Season (May and September)		Off–Season (October 1 to May 1)	
Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
485	575	190*	360	135*	285

*Periods when shuttle would not run

Depending on the level of available funding, shuttle service would be increased from its current weekends-only schedule to seven days a week during the peak period, and on weekends and holidays during the rest of the year. Service could run on approximately 15-minute headways during the peak and shoulder seasons and on holidays, with 30-minute headways during other times (nonpeak weekends). This is in addition to the downtown San Francisco Express Service proposed in all alternatives.

Operating costs for the increase in shuttle service required to carry a greater number of visitors to the monument are difficult to predict because of the variable costs of administration and marketing, as well as the effect the reduction in parking would have on the demand for transit. An analysis of the cost of shuttles was performed in the "Muir Woods Shuttle Alternatives" memo (Nelson\Nygaard 2008a). In that analysis, based on the hourly cost of shuttle service, requirements for layovers and other factors, two cost estimates were developed for a 75% parking scenario (a 25% reduction); they are presented below.

Scenarios involving a 25% removal of parking result in substantial shuttle operational costs, if the intent is to fully compensate for removed parking. Note that these estimates do not include the cost of the vehicles or bus stop amenities necessary to support increased service, which would also be substantial.

Conclusion. The transportation measures included in this alternative are likely to have a long-term, major, beneficial impact on connections between both ferry and regional bus transit and Muir Woods National Monument and the Muir Woods Shuttle. The shuttle would be a key to providing sustainable access to the monument. A larger proportion of visitors could be expected to park remotely and take the shuttle or express service from San Francisco.

TABLE 26. ESTIMATED ANNUAL COST OF SHUTTLE, 75% PARKING AT MUIR WOODS NATIONAL MONUMENT

Scenario	Peak off-site parking demand	Peak buses per hour	Fleet requirement	Annual Cost*	
				$75/hr.	$180/hr.
Alternatives 1 and 3 Scenario A: 75% on-site parking	170	9	9	$500,000	$1,200,000
Alternatives 1 and 3 Scenario B: 75% on-site parking, S.F. shuttles	130	8	10	$600,000	$1,400,000

* Based on low and high hourly rates for transit service providers.

The reduction in the number of cars on the roads approaching Muir Woods National Monument would have a long-term, moderate, beneficial impact on the functionality of the transportation system by reducing congestion. The reduction in visitor-related congestion would allow the shuttles to stay on schedule, and would allow emergency vehicles improved access to the area. This alternative could have a long-term, minor to moderate, beneficial impact on pedestrian and bicycle access by making the access roads safer for these visitors due to reduced traffic and congestion and reduction of road shoulder parking and by redesigning the walkways from the entry area to the monument so they are separated from auto traffic. Even with a 33% reduction in parking and a projected increase in demand, there would still be adequate parking during the off–season (October through April) when the shuttle is not running. During the peak season, the reduction in parking would be offset by an increase in transit service. The reduction in parking could have a long-term, moderate, adverse impact on parking availability on those days when the shuttle is not running.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. In alternative 2, the majority of the built environment (buildings, parking lots, and paved trails) would be removed and all visitors would arrive by shuttle, bicycle, or on foot. Only a small parking area would be available for special needs. The monument entrance as well as all visitor services would be relocated to the current lower parking lot and the area would be designed to accommodate a transit stop for the shuttle. Tour buses would no longer be accommodated.

In addition to changes in modes of access to the monument, the trail system would be redesigned to accommodate fewer visitors. The existing main trail would be relocated out of the floodplain, paved surfaces would be removed, and other trails and bridges could be removed or relocated to promote natural processes. These measures could have a long-term, moderate, adverse impact on visitor ability to access areas of the mature redwood forest now available to them.

Trails in the monument would be designed to connect to other regional trails; Dipsea Trail would be realigned where it crosses Redwood Creek. This is likely to have a long-

term, minor, beneficial impact for those visitors connecting to the monument by trail.

Most auto access would be eliminated, with all parking, both in parking lots and on the roadside, removed. Only essential parking for park operations and to meet the needs of visitors with disabilities would be retained. The upper lot and most of the lower lot in the monument would be restored to their natural condition. This action would have a long-term, major, adverse impact on parking availability at the monument. However, the lack of parking would be offset by greatly increased transit service and off-site parking described below.

As discussed, a welcome center would be created in the vicinity of Highway 101 and State Route 1, which would include parking for visitors and connections to transit, including the Muir Woods Shuttle. Some additional parking may also be provided in other lots in the area that are currently used for weekend shuttle service. Park-and-Ride lots, normally used by commuters, would not be able to accommodate monument visitors during the work week without some reconfiguration. Recent parking counts on weekdays show the Manzanita Park-and-Ride lot is filled to slightly over 100% capacity from 8:00 a.m. to 3:30 p.m., and the Pohono parking lot is at 90% of its maximum use by noon. Turnover in these lots would be slower than those currently in the monument, because the parking duration would include both the time visiting the monument and the travel time to and from the monument. Detailed analysis of lot configuration would take place in future planning efforts.

A lack of access to the monument entrance by auto may affect visitation. There remains the potential for a large number of would-be visitors to not make the trip to Muir Woods National Monument if they could not drive their cars. This group includes people who are continuing on to other destinations after their visit at the monument—for example, Stinson Beach or Mount Tamalpais State Park. Another segment of visitors are traveling in large groups, have small children, or have members in their party with special needs requiring them to use a car. Thus it could be assumed that elimination of all parking at the monument (except for special needs) might depress visitation, although an exact percentage cannot be modeled.

In addition, there will inevitably be those who drive to Muir Woods National Monument regardless of whether there is any official parking provided. Muir Woods Road is public and connects to small coastal communities, so access to the monument by road cannot be prohibited or even limited. Some visitors will arrive from points west and north, and will not have an opportunity to board transit to get to the monument. Enforcement of parking regulations at the monument would have to increase considerably for the elimination of roadside parking to be effective. This cost would likely be borne by the National Park Service rather than Marin County, because county law enforcement staff is extremely limited in West Marin.

Transit service to the monument would be dramatically increased. The Muir Woods Shuttle would run every day of the year, and would include express service from and to downtown San Francisco. Shuttle service originating in Marin County could run every 10 minutes during the peak and shoulder seasons and on holidays; on other days, it would run every 30 minutes. Providing increased service from Sausalito and express service from San Francisco could be expected to reduce parking demand by 25% or more. A substantial increase in transit service, including San Francisco Express and Muir Woods Shuttle service to the Sausalito Ferry, would have a long-term, major, beneficial impact on the functionality of the transportation system to Muir Woods National Monument by increasing the number and capacity of connections, increasing the availability and choices of modes of travel, and reducing congestion.

Operating costs for the increase in shuttle service required to carry all visitors to the monument are difficult to predict because of the unpredictable effect on visitation, and also the variable costs of administration and marketing. An analysis of the cost of shuttles was performed in the "Muir Woods Shuttle Alternatives" memo (Nelson\Nygaard 2008a). In that analysis, based on the hourly cost of shuttle service, requirements for layovers and other factors, three cost estimates were developed for the zero-parking scenario, and are presented below. Scenarios involving complete removal of parking appear to be prohibitively expensive, as much as $9.5 million per year for a package including San Francisco service. If tour bus access were removed, costs would increase further, to as much as $11.5 million per year. Note that these estimates do not include the cost of the vehicles or bus stop amenities.

TABLE 27. ESTIMATED ANNUAL COSTS OF SHUTTLE OPERATIONS, NO PARKING AT MUIR WOODS NATIONAL MONUMENT

Scenario	Peak off-site parking demand	Peak buses per hour	Fleet requirement	Annual Cost	
				$75/hr.	$180/hr.
Alternative 2 Scenario A: 0% on-site parking	690	23	23	$3,000,000	$7,300,000
Alternative 2 Scenario B: 0% on-site parking, S.F. shuttles	520	22	28	$4,000,000	$9,500,000
Alternative 2 Scenario C: 0% on-site parking, S.F. shuttles no tour buses	550	25	34	$4,800,000	$11,500,000

Managers at the monument estimate that 20% of visitors arrive by tour bus. In this alternative, private tour buses would not be allowed in the monument. The elimination of tour bus service would substantially reduce access to this site for certain populations. People who use this mode are generally from out of the area, are traveling in groups, and want to visit multiple destinations on one trip—a major factor for those choosing not to take the shuttle, according to surveys of monument visitors. Tour buses address the needs of this group and also allow them to visit the monument without an auto. Without tour bus service, this group may not visit the monument at all. This measure could have a long-term, moderate, adverse impact on access to the monument.

Conclusion. Alternative 2 proposes actions that would substantially alter the transportation system serving Muir Woods National Monument. Redesign of pedestrian access to the monument entrance is likely to have a long-term, moderate, beneficial impact on visitor access and safety.

In conjunction with the parking provided at the off-site welcome center and other remote parking lots and the greatly increased transit service to the monument, this alternative would have a long-term, major, beneficial, impact on availability of transit, improved traffic flow, and number and capacity of transit connections.

Removing parking from Muir Woods National Monument is likely to result in a reduction in the number of cars on the roads in southwest Marin, allowing transit to better run on schedule and emergency vehicles to have access, and offering less auto congestion to residents. However, while expanded transportation options may increase visitation, from the point of view of the visitor who arrives at the monument by car and is unable to park, the impact would be long term, moderate, and adverse, limiting the ability of some visitors to visit the monument.

The increase in transit services from San Francisco and the Sausalito Ferry, if fully funded through points in south Marin, is likely to have long-term, major, beneficial effects on the transportation system to the monument as well as throughout southwest Marin County, by increasing multimodal opportunities to get to the monument and increasing connectivity to regional transportation.

Auto access may experience a long-term, minor to moderate, beneficial impact because there may be much less auto traffic on Muir Woods Road, while bus traffic on State Route 1 would increase substantially.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Transportation impacts for alternative 3 for Muir Woods National Monument are identical to those in alternative 1.

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

No-action Alternative

Analysis. Under the no-action alternative, current management, programs, operations, and funded construction projects would continue, along with the necessary annual operating funding.

Muir Woods maintains high standards of visitor service thanks to a committed team of NPS staff, partnerships with the Golden Gate National Parks Conservancy and concessions, and a team approach that also includes close working relationships with the state parks and neighboring communities. However, there is much operationally that is marginal due to the small staff size; this results in little time for long-term planning, major project implementation, and training.

Staffing levels would continue at current levels, which are inadequate to meet the responsibilities of the monument. With only 3.5 interpreters and no seasonal interpreters, there are often periods of time when no ranger is onsite, and the NPS presence is loosely covered by interns or volunteers. The interpreters handle educational programs and volunteer management, but there is no one to handle media, training, or partner programming. The law enforcement division operates with one staff member assigned to the area; which includes the monument as well as Muir Beach, Stinson Beach, Olema Valley, Slide Ranch, and Tennessee Valley. One seasonal law enforcement officer is assigned to the monument in the summer as well. This level of staffing is not enough to provide adequate coverage, and results in delays in response time—often interpreters onsite end up spending time responding to emergency incidents. Traffic congestion and conflict is one area of needed additional law enforcement staff. A ranger is needed to provide visitor use assistance for the shuttle and parking. The maintenance division is also understaffed to adequately maintain the monument in good condition. As a result,

deferred maintenance has accrued at park facilities. Low staffing levels contribute to continued moderate, long-term, adverse impacts on park operations.

Primary monument partners are the Golden Gate National Parks Conservancy and the Muir Woods Trading Company, the concessions operation. These partners provide a host of valuable services and products to the monument, such as contact with the visitors, research, restoration, and messaging. They also provide needed funding from fee collection and concession sales. Other partners offer educational programs. The Save-the-Redwoods League is a major funder to enable young people to visit the park and support research. Marin County is a partner in providing shuttle service to the monument. The partners offer something invaluable that would not otherwise be provided and their continued involvement and support is a moderate, long-term, beneficial impact to park operations.

Volunteers are indispensable to the monument. They provide personal interpretive services, conduct special tours, support educational programs, complete much of the restoration work, and offer a special approach that the public responds to very favorably. Thousands of hours per year are logged by volunteers. Volunteer efforts are a continued long-term, moderate, beneficial impact to park operations.

Currently, the condition of many of the buildings is good, but not accessible for persons with disabilities. However, the monument has substantial amounts of deferred maintenance. Even given the direction of the park asset management plan for prioritizing funds, a continued gap in maintenance funding (and staff) would result in an increasing deferred maintenance backlog. Some facilities are better maintained than others are; the Administration-Concession Building is in good condition. Maintenance facilities, such as the Old Inn, are generally in much poorer condition. Facilities in the Camino del Canyon and Conlon Avenue areas are also in poor condition. Infrastructure such as power, water, and phones need to be upgraded and frequently have lapses in service. Inadequate project funds and operational funds would result in moderate, long-term, adverse impacts on mission critical facilities at the monument.

Monument buildings are inadequate for their current uses due to small size and their lack of modern functionality. For example, in the office areas, all desks are shared, and half the computers are not hooked up to the internet. There are no break rooms or meeting rooms. The maintenance division does not have adequate storage space for equipment, or appropriate work space. Inadequate operational facilities would have a continued long-term, minor to moderate, adverse impact on park operations.

Conclusion. The continuation of current management would have both beneficial and adverse impacts on park operations. Continued long-term, moderate, beneficial impacts on operations would result from partner and volunteer efforts.

The continued impact of low staffing levels on park operations is moderate, long term, and adverse. Inadequate project and operational funding would result in major, long-term, adverse impacts on park facilities. Inappropriate space for staff would also result in continued long-term, minor to moderate, adverse impacts on monument operations.

Alternative 1: Connecting People with the Parks

Analysis. There are several proposed changes identified in alternative 1 that would influence park management, operations, and facilities. While designed to contribute to the protection of resources and the enhancement of visitor opportunities, the proposed changes will achieve these ends only if staffing, capital funds, and operating funds are increased in accordance with the cost

estimates identified. If funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.

Additional law enforcement officers are proposed to cover increased picnicking, expanded visitor activities, and the potential for a greater number of lost or injured people. Additional rangers would also assist in parking management at the shuttle station. New maintenance staff would support trail maintenance, upkeep of interpretive signs, increased picnicking, and relocated and new visitor facilities. Increased staff would result in long-term, moderate, beneficial impacts on operations if appropriate funding is available, otherwise the actions of this alternative would result in adverse impacts such as an inability to maintain facilities and an inability to ensure public safety and protection of resources.

The proposed new or reconstructed facilities, such as the Highway 101 / State Route 1 welcome center and parking area, would require additional capital investments. Unless the cyclic maintenance budget is collaborated to maintain the park's facilities as identified in this alternative, the deferred maintenance will increase, even with an initial investment in that asset. Adjusting the operations and maintenance budget to realistically reflect the true costs of a facility will have a long-term, moderate, beneficial impact on park operations; otherwise, the impact would be adverse and result in an increase of deferred maintenance.

Removal of nonessential buildings and parking would reduce associated maintenance and utility costs. Construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in moderate, long-term, beneficial impacts on park operations. These activities would also have short-term, minor, adverse impacts on operations due to the closure of buildings and lands during construction or restoration.

Conclusion. Increased staff would result in moderate, long-term, beneficial impacts, if funded. If funding is available for construction, rehabilitation, restoration, and demolition projects, these projects would result in moderate, long-term, beneficial impacts on park operations. Construction and landscape restoration activities would also result in short-term, minor, adverse impacts while they are underway. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.

Alternative 2: Preserving and Enjoying Coastal Ecosystems

Analysis. If adequate funding is available for additional staff for the public safety division at Muir Woods National Monument, such increases would result in moderate, long-term, beneficial impacts on operations. Increased law enforcement staff is recommended to manage the controlled visitor areas and to protect sensitive resources. Additional rangers would also assist in parking management at the shuttle station. Maintenance staff would decrease under this alternative because of the reduced number of facilities.

The effort to remove most facilities from the monument would have both positive and negative impacts on the operations. While demolition and natural resource restoration would require additional project funding and require staff effort in the short term, over the long term, staff efforts in maintenance of facilities would be reduced, and deferred maintenance would be reduced. However, new proposed facilities, such as the Highway 101 / State Route 1 welcome center and the Muir Woods National Monument welcome center would require adjustment of the operations and maintenance budget to realistically reflect the true costs of the facilities in order to have beneficial impacts on park operations; otherwise, the impact would be adverse and result in an increase of

deferred maintenance. Construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in major, long-term, beneficial impacts on park operations if funded. Construction and landscape restoration activities would result in short-term, minor, adverse impacts while they are underway due to area and facility closures.

Conclusion. Increased staff would result in moderate, long-term, beneficial impacts. If fully funded, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in major, long-term, beneficial impacts on park operations. Construction and landscape restoration activities also would result in short-term, minor, adverse impacts on park operations. Removal of much of the development from inside the monument could make public safety responses more difficult, and would result in a minor to moderate, long-term, adverse impact to park operations. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.

Alternative 3: Focusing on National Treasures (NPS Preferred Alternative for Muir Woods National Monument)

Analysis. If adequate funding is available for additional public safety and maintenance staff at Muir Woods National Monument, such increases would result in moderate, long-term, beneficial impacts on operations. Additional law enforcement officers are proposed to cover increased picnicking, expanded visitor activities, and the potential for a greater number of lost and injured people. Additional rangers would also assist in parking and shuttle management. Additional maintenance staff would support trail maintenance, upkeep of interpretive signs, increased picnicking, and relocated welcome center.

Proposed new or reconstructed facilities, such as the Muir Woods entrance welcome center and interpretive trail improvements, would require additional capital investment. Unless the cyclic maintenance budget is collaborated to maintain the park's facilities as identified in this alternative, the deferred maintenance will increase, even with an initial investment in that asset. Adjusting the operations and maintenance budget to realistically reflect the true costs of facilities would have a long-term, moderate, beneficial impact on park operations; otherwise, the impact would be adverse and would result in an increase in deferred maintenance.

Removal of nonessential buildings and parking would reduce associated maintenance and utility costs. If fully funded, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in moderate, long-term, beneficial impacts on park operations. Construction and landscape restoration activities would result in short-term, minor, and adverse impacts park operations while the activities are underway.

Conclusion. Increased staff would result in moderate, long-term, beneficial impact if adequate funding is available. If funding is available, construction, rehabilitation, restoration, and demolition projects proposed in the alternative would result in moderate, long-term, beneficial impacts on park operations. Construction and landscape restoration activities also would result in short-term, minor, adverse impacts on park operations while the activities are underway. However, if funding and needed staffing levels are not made available when these actions are implemented, the proposed actions would have long-term, moderate, adverse effects on park operations.

Other Analyses and Statutory Considerations 11

INTRODUCTION AND METHODOLOGY

This part of the document discusses other impact analyses required by National Environmental Policy Act and the Council on Environmental Quality. It includes discussions regarding the potential for cumulative impacts, natural or depletable resource requirements and conservation potential, effects on energy requirements and conservation potential, irretrievable or irreversible commitments of resources, unavoidable adverse impacts, and the relationship between short-term uses and long-term productivity of the environment.

CUMULATIVE IMPACT ANALYSIS AT GOLDEN GATE NATIONAL RECREATION AREA, INCLUDING ALCATRAZ ISLAND

METHODOLOGY

The National Environmental Policy Act requires an environmental impact statement to identify and analyze cumulative impacts. A cumulative impact is described in the CEQ regulation 1508.7 as follows:

Cumulative impacts are the impacts that result from incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

The analysis of cumulative impacts must also evaluate the proposed project's potential to contribute to the significant cumulative impacts identified and it must discuss feasible options for mitigating or avoiding any contributions assessed as cumulatively considerable. The discussion of cumulative impacts is not required to provide as much detail as the discussion of the project's *individual impacts*, or the effects attributable to the project alone. Rather, the level of detail should be guided by what is practical and reasonable. The analysis of cumulative impacts uses the same concepts of type, duration, timing, and intensity as described for individual impacts.

The action area for assessing cumulative impacts on the resources retained for detailed analysis is the three-county area (Marin, San Francisco, and San Mateo).

To determine the potential cumulative impacts on the resources, other projects and actions within the three-county area were identified (see Appendix B: "Description of Management Plans Related to this Plan" for a detailed listing of plans with actions that could have cumulative impacts). Projects were identified by discussions with NPS staff, other public land managers, and representatives of city and county governments. Potential projects identified as possible contributors to cumulative impacts included any planning or development activity that was currently being implemented, or is expected to be implemented in the future. Impacts of past actions were also considered in the analysis. A summary of the plans and projects that were determined to be relevant to each of the impact topics is included at the beginning of each cumulative impacts section.

These projects and actions were evaluated in conjunction with the impacts of each alternative to determine if they would result in any cumulative impacts on a particular natural or cultural resource, visitor use and experience, the social and economic environment, transportation, or NPS operations and management. The evaluation of cumulative impacts is qualitative and based on a general description of the project. Cumulative impacts at Golden Gate National Recreation Area and Muir Woods National Monument are discussed independently.

NATURAL RESOURCES

A number of plans and projects, if implemented, could contribute to cumulative impacts on natural resources. Plans and projects that have a relationship to this general management plan are identified and described in appendix B. Those plans and projects that are most relevant to natural resources and could contribute to cumulative impacts on this topic include the Redwood Creek Watershed Vision and various restoration projects in the watershed; county

transportation plans; management plans for various California state parks; the Point Reyes National Seashore draft general management plan and fire management plan; interagency planning efforts such as the Ocean Beach Master Plan; other plans and projects at Golden Gate National Recreation Area, such as the fire management plan, dog management plan, and the redevelopment of Fort Baker; the Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries plan; beach nourishment activities; regional land protection plans and activities such as Golden Lands, Golden Opportunities; the management of lands adjacent to the park; and past land use practices in the region.

Carbon Footprint and Air Quality

Implementation of the plans and projects mentioned in the opening paragraph of this section would contribute to cumulative impacts on carbon footprint and air quality. County transportation plans and projects aimed at reducing personal automobile use and improving alternative transportation would have beneficial cumulative impacts by reducing transportation-related emissions. Projects aimed at improving ecosystems and enhancing natural resources would result in adverse cumulative impacts in the short term, but these would be outweighed by long-term reductions in emissions and the resultant improvement in air quality. The same would be true for the actions related to the management of adjacent public lands, where near-term projects would have short-term adverse impacts on carbon footprint and air quality, but the actions associated with long-term objectives to reduce energy use and emissions and improve the condition of natural systems would have long-term beneficial cumulative impacts. Regional land protection efforts would continue to preserve open space. This would reduce the amount of land available for development and would provide air quality benefits. The actions associated with the management of private lands in the region would likely continue to result in adverse impacts on carbon footprint and air quality, as these actions would likely continue to be sources of energy use and air quality emissions that could increase over time as densities increase.

While the no-action alternative and action alternative 1 would have adverse impact to the park's carbon footprint, alternatives 2 and 3 would have beneficial effects on the carbon footprint. All action alternatives would have a negligible effect on air quality. When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions described above, there would be a minor, adverse cumulative impact on carbon footprint and air quality in the short term, and a minor, beneficial, cumulative impact on carbon footprint and air quality over the long term. The actions contained in the GMP alternatives would contribute a very small increment to this cumulative impact.

Soils and Geologic Resources and Processes

Implementation of the plans and projects mentioned in the opening paragraph of this section would have cumulative impacts on soils and geologic resources and processes. Implementation of county transportation plans and projects that would modify roadways would likely result in adverse impacts on roadside soils and geologic resources and would contribute to changes in the functionality of geologic processes in the area. Beach nourishment activities would continue to provide essential sources of sand to nearshore and shoreline environments, resulting in a beneficial impact; however, the continuation of dredging and alteration of nearshore sand deposits would continue to cause adverse impacts on natural sand transport processes. Projects aimed at improving ecosystems and enhancing natural resources could result in adverse cumulative impacts in the short term, but these would be outweighed by long-term improvements to function and integrity of soils and natural

geologic processes. The same would be true for actions associated with the management of adjacent public lands, where near-term projects could have short-term adverse impacts on soils and geologic resources, but actions to achieve long-term objectives to improve natural systems would have long-term beneficial cumulative impacts on soils and geologic processes. Regional land protection efforts would continue to preserve open space and protect soils and geologic resources. The actions associated with the management of private lands in the region would continue to have both adverse and beneficial impacts on soils and geologic processes, depending on the nature of land use and stewardship practices.

The existing recreation facilities and new recreation development actions in all GMP alternatives would have localized adverse effects on soils and geological resources. However, action alternatives 1, 2, and 3 would also have beneficial effects on soil conditions in other areas, by eliminating unsustainable roads and trails, removing facilities and structures, and restoring the respective sites. Alternative 2 would have the least amount of adverse effect from new recreation and the most beneficial effect from natural restoration. When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions described above, there would be a long-term, minor, beneficial cumulative impact on soils and geologic resources and processes.

Water Resources and Hydrologic Processes

Implementation of the plans and projects mentioned in the introduction to this section would have cumulative impacts on water resources and hydrologic processes. County transportation plans and projects would modify roadways that could modify surface water flow and drainage. Roadway projects would also likely result in soil erosion and generate urban pollutants that would adversely impact water quality. Conversely, certain projects would reduce sedimentation and improve the conveyance of water—beneficial impacts. Projects aimed at improving ecosystems and enhancing natural resources (i.e., Big Lagoon restoration, Lower Redwood Creek floodplain restoration, Fern Creek riparian fencing, Coast Trail habitat enhancement projects, sediment reduction projects) could result in adverse cumulative impacts on water resources and water quality in the short term, but these impacts would be outweighed by long-term improvements to the integrity and function of water resources, especially for wetlands, floodplains, and natural creek processes. The same would be true for actions associated with the management of adjacent public lands, where near-term projects could have short-term adverse impacts on water resources (including water quality and quantity), but actions to achieve long-term objectives of improved natural systems would have long-term beneficial cumulative impacts on water resources and hydrologic processes. Regional land protection efforts would continue to preserve open space and protect water resources. Actions associated with the management of private lands in the region would continue to have both adverse and beneficial impacts on water resources and hydrologic processes, depending on the nature of land use and stewardship practices.

All GMP alternatives include actions that provide for the restoration of natural areas and ecological processes, which directly and indirectly help restore the natural hydrologic regime. When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a long-term, minor to moderate, beneficial cumulative impact on water resources and hydrologic processes.

Habitat (vegetation and wildlife) and Special Status Species (federal and state threatened and endangered species)

All of the plans and projects mentioned in the introduction to this section (and appendix B) would have cumulative impacts on vegetation and wildlife habitat, if implemented. County transportation plans and projects would modify roadways that could alter the integrity of native habitat, increase habitat fragmentation, and introduce nonnative plants and animals that could displace and adversely affect native species, including special status species. Roadway projects would also likely result in soil erosion and generate urban pollutants that would adversely impact aquatic habitats. Conversely, certain projects would reduce impacts from roadways and improve migration corridors. Restoration projects aimed at improving ecosystems and enhancing natural resources could result in adverse cumulative impacts on native habitat in the short term, but these impacts would be outweighed by long-term improvements to the integrity and function of habitat. The same would be true for actions associated with the management of adjacent public lands, where near-term projects could have short-term adverse impacts on habitat, but actions implemented to achieve long-term objectives to improve natural systems would have long-term beneficial cumulative impacts on habitat integrity and function. Regional land protection efforts would continue to preserve open space and protect a variety of habitat types. Actions associated with the management of private lands in the region would continue to have both adverse and beneficial impacts on vegetation and wildlife habitat, depending on the nature of land use and stewardship practices.

All of the GMP alternatives include actions that provide for natural restoration, education, and stewardship that would have beneficial effects on wildlife habitat. Action alternatives 1, 2, and 3 include actions that would provide additional habitat benefits by eliminating unsustainable or unneeded roads, trails, or facilities, and restoring the respective sites. However, action alternatives 1, 2, and 3 would also yield some adverse effects by expanding visitor access and recreation development in some areas. As for the waterbird habitat at Alcatraz Island, the no-action alternative and action alternatives 1 and 3 would have adverse effects, while alternative 2 would have beneficial effects.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a long-term, minor to moderate, beneficial cumulative impact on vegetation and wildlife habitat. However, when the continuing effects of past, present, and future urbanization throughout the Bay Area region (and beyond) are factored into the assessment, the overall cumulative effect on vegetation and wildlife could be long-term, minor to moderate, and adverse. Similarly, although impacts on local special status species and their habitat in the project area would be mitigated to minimize potential impacts, and impacts of other projects in the area would generally be beneficial, the adverse impacts from urbanization of the region would continue to result in habitat loss; the cumulative impact to most special status species and their habitat would be adverse.

It should be noted that although projects throughout the region (including NPS projects in the park) may have notable beneficial and adverse effects on wildlife habitat and/or wildlife individuals, the overall effect on the state, national, or global populations of the various species would be considerably smaller and in most cases, rather negligible. The only exceptions would be cases of small, distinct, isolated populations of a particular species. As noted above, the continuing urbanization of the Bay Area and several others areas of coastal and inland California over time would only further contribute to the adverse effects to wildlife, not only to individuals and habitat, but in

some cases to species populations. One example of this potential relates to avian species, particularly waterbird species that depend highly on limited, specialized habitat conditions along coastal areas. As urbanization and coastal development continues in the future, the cumulative effects to species (and in some case populations) of some of these waterbird species may become increasingly adverse.

CULTURAL RESOURCES

A number of past, present, and ongoing plans, programs, and projects, if implemented, could contribute to cumulative impacts on cultural resources. Plans, programs, and projects that have a relationship to this general management plan are described in the section "Relationship of This Plan to Other Plans" in part 1 and in volume 1, appendix B. Those plans and projects that are most relevant to and could contribute to cumulative impacts on cultural resources include the following:

- National Park Service plans currently being prepared such as the Extension of San Francisco Municipal Railway's Historic Streetcar Draft Environmental Impact Statement
- National Park Service trails and transportation plans and programs such as the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement* (2009)
- National Park Service restoration plans such as the *Alcatraz Island Historic Preservation and Safety Construction Program Environmental Impact Statement* (2001), the *Sutro Historic District Comprehensive Design and Environmental Assessment*, and restoration plans for Redwood Creek and Big Lagoon
- National Park Service program implementation plans such as the *Bay Area Museum Resource Center Plan*, and the redevelopment plan for Fort Baker
- State and regional plans such as the *California Department of Parks and Recreation – Angel Island State Park Resource Management Plan / General Development Plan / Environmental Impact Report* (1979), and the *San Francisco Planning and Urban Research Ocean Beach Master Plan*
- County and local plans such as the *Marin Countywide Plan* (2007) and amended (2009), *Pacific Gas and Electric Jefferson-Martin 230 KV Transmission Line Proposed Settlement and Environmental Assessment* (2004), *San Francisco Public Utilities Commission Peninsula Watershed Management Plan* (2001), the *San Francisco General Plan* (2004), the *Presidio Trust Vegetation Management Plan* (2001), the *Presidio Trust Management Plan* (2002), and the *Ocean Beach Master Plan* (2012)

Past human use and practices and management of lands in and around Golden Gate National Recreation Area, such as agricultural operations and construction associated with urban, suburban, military, and recreational development, have also contributed to cumulative impacts on cultural resources.

Archeological Resources

The actions in the plans, programs, and projects that are listed above, as well as past human use and management of lands in and near the park would have cumulative impacts on archeological resources. Development projects, NPS trails and transportation programs, NPS restoration and redevelopment projects, and county and local plans could result in adverse cumulative impacts on archeological resources as a result of ground disturbance operations; however, NPS projects and plans implemented on park

lands would include every effort to preserve archeological resources or mitigate sites that could not be avoided. National Park Service restoration and redevelopment plans would have beneficial cumulative impacts on archeological resources because they would emphasize cultural resource protection and preservation as well as mitigation if sites could not be avoided. Past human use and management of lands in and around the park, such as agricultural operations, ranching, and construction associated with urban, suburban, military, and recreational development, may have already resulted in adverse cumulative impacts on archeological resources because these resources could have been lost or degraded as a result of ground disturbing operations and the lack of understanding and appreciation of these resources. Due to funding and staffing constraints, a programmatic lack of baseline surveys for archeological resources in the park over the last 40 years may have resulted in deterioration and loss of archeological resources.

When the likely impacts of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present, and reasonably foreseeable actions previously described, there would be cumulative, long-term, minor to moderate, adverse impacts on archeological resources on lands in and near the park. The actions contained in the GMP alternatives would generally contribute a small beneficial increment to the overall adverse cumulative impacts on archeological resources.

Ethnographic Resources

National Park Service restoration plans associated with Alcatraz Island would provide for repair, stabilization, and rehabilitation of cultural resources on the island, resulting in long-term, minor to moderate, beneficial cumulative impacts on the island's ethnographic resources and contributing to the island's ethnographic significance for American Indian tribes and organizations. Past human use and management of Alcatraz Island, such as agricultural operations and construction associated with military, penitentiary and recreational development, may have resulted in the lost or degradation of ethnographic resources, adding to the adverse cumulative impacts.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present, and reasonably foreseeable actions previously described, there would be long-term, minor, adverse cumulative impacts on ethnographic resources on Alcatraz Island. However, the actions contained in the GMP alternatives would generally contribute a small beneficial increment to the overall adverse cumulative impacts on ethnographic resources.

Historic Structures

Past human use and management of lands that are in and near the park (such as construction associated with urban, suburban, and recreational development and other activities) have resulted in the loss or deterioration of historic structures in the San Francisco Bay area. The park's seacoast fortifications today comprise what is widely considered to be the most comprehensive collection of military architecture and coastal defense systems and the finest surviving examples of military engineering for coastal defense in the United States. National Park Service trails and transportation plans and programs, NPS restoration and redevelopment plans, NPS program implementation plans, state and regional plans; and county and local plans, all provide for the protection and preservation of historic structures and their architectural and engineering values and therefore the implementation of these plans would contribute to beneficial cumulative impacts on historic structures.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present,

and reasonably foreseeable actions previously described, there would be a cumulative, long-term, moderate, beneficial impact to historic buildings. The actions contained in the GMP alternatives would contribute a relatively large beneficial increment to the overall cumulative impacts on historic buildings.

Cultural Landscape Resources

Implementation of NPS trails and transportation plans and programs and county and local plans, such as the *Marin Countywide Plan* and the *San Francisco General Plan*, would have beneficial cumulative impacts on cultural landscape resources because of their emphasis on preservation of cultural landscapes and minimization of adverse effects on cultural landscapes. Implementation of NPS plans currently being prepared, such as the Extension of San Francisco Municipal Railway's Historic Streetcar, and county and local plans, such as the Pacific Gas and Electric Jefferson-Martin 230 KV Transmission Line Proposed Settlement, would result in the introduction of new elements to the cultural landscapes of the San Francisco Bay area and thus potentially compromise the integrity of those cultural landscapes. Implementation of NPS restoration plans, such as those for Redwood Creek and Big Lagoon, could result in the loss of some cultural landscape resources and thus compromise their cultural landscape values.

Implementation of NPS restoration and program plans, state and regional plans, and county and local plans would result in beneficial cumulative impacts on cultural landscape resources because of their emphasis on protection, preservation, and rehabilitation of cultural landscape resources and values. Past human use and management of lands in and near the park, such as agricultural operations, ranching, and construction associated with urban, suburban, military, and recreational development, have compromised the integrity of cultural landscapes, and have resulted in the loss of many of the region's cultural landscape resources and values.

When the likely impacts of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a long-term, minor to moderate, adverse cumulative impact on cultural landscape resources. The actions contained in the GMP alternatives would contribute to beneficial impacts on cultural landscape resources, but they would contribute only a small increment to the overall cumulative impacts on cultural landscape resources.

Park Collections

None of the past, present, or ongoing plans, programs, and projects described in the "Relationship of This Plan to Other Plans" section in part 1 of this document or in appendix B would have any appreciable cumulative impacts on park collections. Ongoing actions in the park, in conjunction with the *Bay Area Museum Resource Center Plan* and *the Ocean Beach Master Plan*, will have appreciable beneficial cumulative impacts. The actions contained in the GMP alternatives would contribute to cumulative, long-term, moderate, beneficial impacts on the park collections.

VISITOR USE AND EXPERIENCE

The cumulative impacts on visitor use and experience resulting from the actions described in the GMP alternatives in combination with actions resulting from related projects and policies of other entities within the Bay Area are identified in this section. In preparing the cumulative impacts analysis, the actions of the past, present, and foreseeable future were estimated at a qualitative level given the visionary nature of the general management plan. In estimating

the impacts of other actions in combination with the GMP alternatives the team relied on the actions or potential actions from various local, state, and federal plans and projects as well as the knowledge of the park staff. A summary of these other plans can be found in the sections titled "Relationship to Other Plans" and in "Appendix B: Description of Management Plans Related to this Plan."

The actions from plans and projects that are most relevant to visitor use and experience and could contribute to cumulative impacts include: county comprehensive plans; local open space and transportation plans and projects; area park plans such as those for Angel Island State Park, Mount Tamalpais State Park, San Francisco Maritime National Historical Park and Point Reyes National Seashore; the Redwood Creek Watershed Vision; plans and projects at Golden Gate National Recreation Areas such as the Trails Forever Initiative, a dog management plan, equestrian planning in Marin County, the redevelopment of Fort Baker, trails and bikeways planning in the Presidio, and the Ocean Beach Mater Plan; as well as several other educational, stewardship, and recreation plans and projects taking place in the Bay Area. These various other actions would generally have beneficial impacts on visitor use and experience in the area by providing an increased diversity of recreation opportunities, additional educational and stewardship programs, and improved connectivity between public lands and open space in the region.

Specific actions in the GMP alternatives include management tools to regulate access to park lands in order to ensure the quality of recreational opportunities and resources available to visitors. These actions in combination with other plans and projects may result in a small number of visitors seeking other locations such as state and local parks, for specific recreational activities, potentially having adverse impacts on visitor use and experience, and beneficial and/or adverse impacts on other parks.

Diversity of Recreation Opportunities and Availability of Other Visitor Support Services and Facilities

The GMP alternatives provide for a wide variety of recreational opportunities for park visitors, as well as a network of other visitor support services and facilities. The variety of existing and new recreational opportunities provided by the no-action alternative and action alternatives 1 and 3, respectively, would all have notable beneficial effects on visitor use and experience. Although each alternative has a similar mix of visitor opportunities, the alternatives differ in the number and type of opportunities provided. In the no-action alternative and alternative 1, the emphasis is on providing visitors with a greater mix of options and a choice of opportunities and self-guiding exploration. In alternative 2, there is a greater emphasis on providing more primitive types of visitor opportunities within a natural and wild setting. Finally, alternative 3 provides visitors with the opportunity to be immersed in the settings of those natural and cultural resources that are nationally significant. This alternative relies on park educational and interpretive programs to help visitors learn about and explore these resources.

In addition to the impacts resulting from the actions of implementing the GMP alternatives (discussed previously in the environmental consequences section), the various other actions described below collectively contribute to visitor use and experience in the park. The actions resulting from implementation of the comprehensive plans for each county, the master plans for gateway municipalities, along with their respective specific community plans for parks, trails, open space, and transportation, would all have a long-term, minor to moderate, beneficial impact on visitor experiences in and around the park. Many of these recreational opportunities occur outside the park and other activities cross back and forth of the park boundary such as hiking, running, and horseback riding. The Bay Area contains many local, states, and

federal park lands that provide a wide variety of complementary day-use and overnight recreation opportunities; this further provides choices for visitors and local residents in the recreational opportunities and outdoor settings that they participate in. The combination of these managed open space lands provide for long-term, moderate, beneficial cumulative effects on the visitor use and experience.

The National Park Service has completed or is in the process of preparing plans with actions that combined with those of the GMP alternatives will enhance recreational opportunities for park visitors. For example, a dog management plan is currently under development and will designate appropriate locations and management strategies for dog-walking activities in the park. A plan to address equestrian activities and facilities in Marin County is being developed. The recent renovation of historical Fort Baker into the Cavallo Point Lodge and the expansion of the Headlands Institute and other park partner programs all complement the actions in the GMP alternatives and contribute to the diversity of visitor opportunities.

Finally, several other projects and initiatives are being undertaken throughout the Bay Area by a variety of other public, private, and nonprofit organizations. These projects and initiatives include preserving additional open space, renting recreational equipment, providing connections to a larger regional trail network, and promoting other outdoor recreation activities such as hiking, running, surfing, biking, touring, scenic driving, wildlife viewing, and equestrian opportunities. The past, present, and reasonably foreseeable actions of other entities, public and private, combined with those actions resulting from the GMP alternatives will have a long-term, moderate, beneficial cumulative impact on the availability and diversity of outdoor recreational opportunities.

Education, Interpretation, and Stewardship Programs and Opportunities

The GMP alternatives include several actions that would also expand and enhance education, interpretation, and stewardship programs and opportunities. Thus, all GMP alternatives would have a beneficial effect on visitor use and experience in this regard. The actions included in alternatives 2 and 3 would provide the greatest level of education and stewardship programs compared with the no-action alternative and alternative 1, where programs are provided but the emphasis is more on self-guided exploration. Additionally, alternative 3 would improve the depth and content of available interpretive information and would encourage visitors to actively immerse themselves in the resource-based experiences (whether natural or cultural). Park partners—such as the Institute at the Golden Gate, Slide Ranch, Crissy Field Center, Headlands Center for the Arts, and numerous others—also play an integral role in all GMP alternatives by complementing and expanding beyond NPS programs. The contribution from a variety of park partners provides educational, interpretive, and stewardship opportunities for all ages from toddlers to the elderly.

In addition to the NPS and park partner programs, there are additional environmental education, interpretive, and stewardship opportunities provided by Bay Area educational institutions, environmental education and open space organizations, and the many local, state, and other federal parks that promote an understanding of the region's important and diverse ecological systems and cultural history.

The past, present, and reasonably foreseeable actions of other entities, public and private, combined with those actions resulting from the GMP alternatives will have a long-term, moderate, beneficial cumulative impact on the availability and diversity of educational, interpretive, and stewardship programs.

Access and Connectivity to Parks and Open Space in the Bay Area

All of the GMP alternatives include actions that would expand or enhance access to the park and its connectivity with other parks, trails, and communities in the Bay Area, and thus, all alternatives would have a beneficial effect on visitor use and experience. These expansions and enhancements would primarily come in the form of improved connections with public transportation networks, multimodal access, and increased trail connections with local communities and parks.

These various other actions, projects, and initiatives would also contribute to visitor use and experience. For example, most of the comprehensive plans and master plans for the surrounding counties and cities include elements that promote connections with surrounding parks and communities (i.e., transportation connections, pedestrian/bicycle connection, and even parkland connections). Several communities also have issue-specific plans that guide connectivity development, such as public trail plans, transportation plans, and open space plans. Other local, state, and federal parks and open space programs in the Bay Area also implement management plans and projects that improve park land-to-park land trail connections or land connections. This also includes the actions associated with enhancing ferry access throughout the Bay Area and those of the Golden Gate Bridge Highway and Transportation District, that provide connections for hikers and bikers—in addition to vehicles—between Marin and San Francisco counties. The contribution of other public transportation agencies also beneficially impact visitor use and experience in combination with the GMP alternatives by providing more diverse and efficient options for access to major units of Golden Gate National Recreation Area.

Some specific projects at Golden Gate National Recreation Area (independent of the GMP action alternatives) will also contribute to the cumulative impacts on visitor use and experience. The Trails Forever Initiative, launched in 2003 by the Golden Gate National Parks Conservancy, provides a systematic approach to connecting a world-class system of trails throughout the park. The Muir Woods National Monument shuttle improves access to Muir Woods National Monument and the backcountry of Mount Tamalpais State Park when parking is in short supply. In addition, the park continues to coordinate with local and regional land and water transportation services and their links to the greater Bay Area to provide alternative visitor access to open spaces including the park. These programs, in combination with the GMP alternatives, will provide enhanced recreation opportunities along with better travel connections between park sites, and between communities and the park.

The past, present, and reasonably foreseeable actions of other entities, public and private, combined with those actions in the GMP alternatives will have a long-term, moderate, beneficial cumulative impact on access and connectivity to parks and open spaces in the Bay Area.

SOCIAL AND ECONOMIC ENVIRONMENT

Along with the actions identified in this general management plan, the actions identified in a number of plans and projects in the local gateway communities, the three adjacent counties, and the overall San Francisco Bay Area could contribute to cumulative impacts on the social and economic environment in the area. Plans and projects that have a relationship to this general management plan are identified and described in the "Relationship of This Plan to Other Plans" section in part 1, and in "Appendix B: Description of Management Plans Related to this Plan." The proposed actions in these plans and other management actions all have effects on the social and economic environment, both individually

and collectively. These effects mainly relate to the quality of life of area residents and the economy of the area. The cumulative contributions to the quality of life and economy could extend throughout the gateway communities, the three adjacent counties, and the overall Bay Area.

Quality of Life

The quality of life for residents living in proximity of park lands could be influenced by the actions proposed in the alternatives of this general management plan in addition to those that are proposed or implemented by other local and regional entities.

Golden Gate National Recreation Area and Point Reyes National Seashore make up a large open space adjacent to many other state and local parks and open spaces within close proximity to San Francisco Bay cities and communities. The area's open space is integral to the quality of life for its residents. As described in the part 8 of this document, the location of Golden Gate National Recreation Area at the urban-wildland interface makes it particularly important for residents' physiological and psychological health, community identity, landscape aesthetics, and community building. As other private land continues to be developed and urbanized, the park will become more valuable to the community and to the quality of life of its residents. All GMP alternatives would maintain and expand the park's role in contributing to the quality of life of Bay Area residents.

Similarly, the mosaic of other park and open space lands in the Bay Area contribute to quality of life. These other park lands, which are owned and managed by various cities, counties, the state, and other preservation organizations, complement Golden Gate National Recreation Area in providing many benefits relating to resident health, recreation, landscape aesthetics, and community-building. These other land management agencies and preservation organizations also will continue to manage their existing park lands in a way that supports programs and opportunities that contribute to quality of life of Bay Area residents. In addition, these agencies will continue to work individually and to coordinate with each other to seek out new lands to acquire, with the collective goal of expanding the network of open space and urban recreation lands in the Bay Area.

When the likely effects of implementing the actions contained in each of the GMP alternatives are added to the effects of these other past, present, and reasonably foreseeable open space preservation actions, a long-term, minor to moderate, beneficial cumulative impact on the quality of life for residents in the Bay Area could result. The impacts that could result from implementing the actions in the GMP alternatives would constitute a substantial contribution to this overall cumulative effect in the local gateway communities near the park, but constitute a small contribution to the overall cumulative effect in the other communities throughout the Bay Area. This difference would be due to the existence of other park lands in closer proximity to these other communities.

The no-action alternative and action alternatives 1, 2, and 3 emphasize outreach, welcoming efforts, and community building that would help foster a new relationship between the park and the diverse residents of the Bay Area. As discussed in "Part 9: Resources and Values that could be Affected by the Alternatives (Affected Environment)" when the GMP action alternatives are compared with the no-action alternative, there are notable variations in community outreach actions. However, when considered in the context of all other similar actions and projects in the surrounding communities and throughout the Bay Area, the differences between the park GMP action alternatives become minimal. The actions proposed in the various alternatives include community outreach programs, maintaining or adding group facilities, developing new park programs that reach out to new and

underserved residents, and establishing new welcome/orientation facilities in key locations in the park.

Likewise, there are many local and regional entities, including social service organizations and church groups, that reach out to many different communities and provide programs and access to the area's open spaces. Local educational institutions facilitate community outreach programs and outdoor and environmental clubs. Local, county, and state parks offer additional programs and access to open spaces. These programs and opportunities create a diverse choice for Bay Area residents that contribute to healthy communities, related amenities, and access to outdoor recreation opportunities.

When the likely effects of implementing the actions contained in each of the GMP alternatives are added to the effects of these other past, present, and reasonably foreseeable outreach actions, a long-term, minor to moderate, beneficial cumulative impact on the quality of life for residents in the respective local communities could result. The impacts of implementing the actions in the GMP alternatives would constitute a substantial contribution to this overall cumulative effect in the local gateway communities, but would constitute only a small contribution to the overall cumulative effect in the communities that are farther from the park.

Another important attribute to quality of life in the Bay Area is visitor's access to education and resource stewardship opportunities. All the GMP alternatives contain a strong component on education and stewardship that includes improving facilities and enhancing programs at park sites throughout the three gateway counties. Similarly, our park partners, educational institutions, and most local and state government park and open space programs throughout the Bay Area offer active and diverse education and stewardship opportunities for residents in the respective communities. The Bay Area is home to numerous nonprofit organizations with missions to improve community awareness and engagement through education and resource stewardship activities and programs. Various local school districts also provide such opportunities and programs to their students, often by using local parks and open space lands as "natural classrooms" to give students hands-on learning and stewardship experiences.

When the likely effects of implementing the actions contained in each of the GMP alternatives are added to the effects of these other past, present, and reasonably foreseeable education and stewardship actions, a long-term, minor to moderate, beneficial cumulative impact on the quality of life for residents in the respective local communities could result. The impacts of the GMP actions on the quality of life of the local residents would contribute to this overall cumulative effect in the local gateway communities relatively close to the park, but would constitute only a small contribution to the overall cumulative effect in the communities that are farther from the park.

The accessibility and connectivity of park land is another key contributor to quality of life. As previously described, park and open space lands in and around a densely populated area are important for the following reasons: (1) they provide enjoyable recreation opportunities for residents, (2) they offer opportunities for diverse members of the community to gather and interact in a common setting, and (3) they help encourage local residents to exercise and stay active, which yields innumerable health benefits (individually, and collectively as a community). Thus, providing easy access and connection to these parks is equally important to a community's quality of life. All alternatives for the general management plan include distinct actions that would expand public accessibility to the park and improve connectivity with other local and regional parks and trails. However, action alternatives 1 and 3 would accomplish this to a greater extent. Under all alternatives, improvements to park accessibility and connectivity would

be accomplished by two means: improved local and regional connections to other trails and parks; and improved public transportation facilities that better serve the park and other open space lands and communities in the area.

Along with these actions of the GMP alternatives, various other plans, projects, and actions in the Bay Area would contribute to quality of life by improving park land accessibility and connectivity. For example, the park management plans for most local government parks and open spaces in the region charge the respective land managers with the task of identifying and pursuing new and better connections to other regional trails or parks. Some of the city and county comprehensive plans also include regional trail planning elements (e.g., San Francisco Bay Trail and the California Coastal Trail) that highlight key connection corridors and include community connectivity as an integral goal or objective in land use planning. These elements and goals will enable urban planners to ensure that local and regional trail connections are both retrofitted to existing developments and included in future developments as the communities grow.

Also, some of the local governments and nonprofit groups throughout the Bay Area (e.g., Association of Bay Area Governments, Bay Area Open Space Council, Golden Gate National Parks Conservancy) have adopted specific trail plans that promote accessibility and connections to local parks and identify regional trail corridors for pedestrians and bicyclists. These plans will likely give way to future local and regional trail construction actions as funding and trail development partners become available. Also, in addition to local and regional trail planning efforts, various local governments have taken on local and regional transportation system planning projects that could serve to improve park land access, and thus improve quality of life in the area. The actions set forth by these transportation plans could improve park access by expanding public transit opportunities (via road, rail, or water) and by minimizing traffic congestion, which could reduce drive times to and from park sites.

When the likely effects of implementing the actions contained in each GMP alternatives are added to the effects of these other past, present, and reasonably foreseeable accessibility and connectivity actions, a long-term, moderate, beneficial cumulative impact on the quality of life for residents in the respective local communities could result. The impacts of the park's GMP alternative actions on the quality of life of the local residents would constitute a small to moderate component of this overall cumulative effect in the local gateway communities that abut the park, but would constitute only a small component of the overall cumulative effect in the communities that are farther from the park.

The availability of equestrian facilities is also considered an important quality of life attribute for many in the Bay Area. The GMP action alternatives 1 and 3 would maintain and expand the available equestrian facilities and programs in the park. Action alternative 2 would maintain the use of the existing facilities, but might result in the removal of some equestrian facilities within the park. Beyond the park, other private equestrian facilities exist in the Bay Area on private lands. These other equestrian facilities contribute to the overall supply of equestrian opportunities and therefore to the quality of life for local residents.

When the likely effects of implementing the actions contained in the GMP no-action alternative and alternatives 1 and 3 are added to the effects of these other past, present, and reasonably foreseeable actions and trends related to equestrian opportunities, a long-term, moderate, beneficial cumulative impact on the quality of life for residents in the nearby communities could result, based on the continuation of the current availability of non-Park Service equestrian facilities. When the effects of alternative 2 are combined with the impacts of these other actions and trends,

a long-term, minor, beneficial cumulative impact on the quality of life could result. If privately owned equestrian facilities decline in the Bay Area, then the cumulative impacts on the quality of life could be long term, moderate, and adverse. The impacts of the GMP alternatives on the quality of life of the local residents would constitute a moderate contribution to this overall cumulative effect in the local gateway communities but would constitute a small contribution to the overall cumulative effect in the communities that are farther from the park.

Quality of life is also indirectly affected by outcomes from interagency relationships and from collaboration between the National Park Service, park partners, other local land managers, and surrounding local governments. If public, private, and nonprofit entities maximize their cooperation in providing natural, cultural, educational, and recreational opportunities for the public, the quality and quantity of the resulting opportunities also will be maximized. Cost sharing, idea sharing, facility interconnectedness, and program coordination are just a few of the benefits that stem from interagency collaboration. Collectively, the actions that result from regional collaboration can provide a range of benefits; all contributing to improving the quality of life for residents. The focus and prioritization of the collaboration efforts may vary slightly across all GMP alternatives; however, all alternatives include actions that aim to improve and expand relationships with park partners, other land managers, local recreation, environmental, and historic organizations, and surrounding local and state governments.

Likewise, many of the Bay Area public land managers and local governments that are in proximity to the park also place a high priority on interagency coordination and partnership development. Such priorities are set forth in most of the comprehensive plans and park management plans for these communities and open space programs. Just as all GMP alternatives would charge NPS staff with working closely with other land managers, municipalities, and park partners, these other city plans, county plans, and park management plans charge their respective staff to do the same. In addition, several nonprofit and private sector organizations in the Bay Area include the development of public-private partnerships as a key to their organizational missions. Given the large number of government jurisdictions, nonprofit organizations, and other park-related interests that exist in the Bay Area, interagency collaboration and partnership development have become an integral part of most planning efforts in this relatively small geographic area.

When the likely effects of implementing the actions contained in each of the GMP alternatives are added to the effects of these other past, present, and reasonably foreseeable relationship-building actions, a long-term, minor to moderate, beneficial cumulative impact on the quality of life for residents in the respective local communities could result. The impacts of the GMP alternative actions would constitute a moderate contribution of this overall cumulative effect in the local gateway communities, but would constitute a small contribution to the overall cumulative effect in the communities that are farther from the park.

Economy

Actions that are proposed in the GMP alternatives would contribute to the economy of the local gateway communities and the overall Bay Area. The breadth and intensity of the park's economic influence varies considerably among economic sectors and locations in the Bay Area. However, given the multiplier effect of economic activity (as explained in "Part 9: Resources and Values that could be Affected by the Alternatives [Affected Environment]"), money spent or earned in one locality or economic sector typically circulates to and from other localities or sectors. Therefore, just as

regional economic activity can contribute to local economic conditions, the reverse is true as well. Given the interactions and relationships of local and regional economies, the cumulative effects that are discussed below should be considered holistically, with overlaps expected. For the purpose of identifying and explaining these effects, this section separates the economic impacts discussion into three categories: local economy of the gateway communities and adjacent three counties, tourism industry economy of San Francisco, and regional economy of the overall Bay Area.

Local Economy of the Gateway Communities and Adjacent Three Counties

The economy of the gateway communities, the three adjacent counties, and the overall Bay Area would be influenced by the GMP alternatives and the other plans and management actions identified in the above discussions. Actions and policies in all of these plans have the potential to generate economic activity via visitation increases, planning and project contracting, construction and restoration, implementation of new programs, facility development and expansion, job creation, expenditures by NPS staff living in local communities, or other sources.

As discussed in the impact analysis of the GMP alternatives, alternatives 1, 2, and 3 all include substantial construction, site restoration, and reclamation projects that would create and accommodate new or restored historic structures or park facilities, and would restore the park's natural resources. Alternatives 1 and 3 would provide the highest level of historic structure restoration and new or expanded park facilities and programs. Many of these construction and restoration projects would generate economic activity in the region via NPS contracts awarded to local planning, design, and construction firms in future years. The implementation of these actions would also result in an expansion of programs and services that would generate more attractions for visitors (and the potential for increased visitation), more park concession business opportunities, more tourist revenue for gateway community businesses (e.g., hotels, restaurants), and more opportunities for park partners. For example, alternatives 1 and 3 include various facility and visitor service expansions at park sites throughout the three counties and on Alcatraz Island. Many of these expansions would necessitate the hiring of new employees by park partners, concessioners, or the National Park Service.

In addition, the increased community outreach efforts associated with alternatives 1 and 3 would likely generate an increase in park visitation (e.g., by reaching out to the diverse population of the Bay Area). This potential increase in visitation could yield economic activity by generating additional revenues for the park and the tourism businesses that support park visitors.

Many of the employees of park partners, concessions, and the National Park Service reside in the gateway communities around the park in all three adjacent counties. These employees contribute to the local economy directly by spending their earned salaries at local businesses and paying local taxes. New jobs with park partners, concessions, and the National Pak Service that result from implementing actions in the GMP alternatives would also yield such economic contributions to the local economy. The actions that prompt economic activity would not only support these businesses and their employees directly, but the economic multiplier effect would also circulate this generated money through the local and regional economy.

In addition to Golden Gate National Recreation Area, there are other major contributors to the economic conditions of the area. Many of the local small businesses support park visitors with sports equipment and hospitality services. Changes in park visitation can influence the success of these

businesses. Most of the local gateway communities are also dependent on nontourism businesses that generate substantial economic benefits and community support. These businesses include those associated with residential, commercial (retail), educational, medical, governmental, and industrial sectors of these communities. The continuous operation of and improvement to the infrastructure of local communities also contribute economically in addition to allowing for economic growth. The construction of several infrastructure projects that would serve these communities would have direct effects on the local economy. Roadway projects, water utility projects, and gas and electric supply projects are just a few examples of other actions that would generate economic activity in the area. Management actions at the other local, state, and federal lands in the Bay Area would include actions that would contribute to economic activity associated with transportation and regional services (e.g., ferry service, schools, social services, airports, waste disposal). Future economic growth can be guided by the visions that the communities develop through city and county comprehensive plans, land use policies, zoning ordinances, and other community economic and redevelopment efforts. These plans and policies can guide and encourage direct economic activity such as commercial business growth (e.g., retail, professional, and hotel/restaurant), housing growth, tourism, and industrial growth.

When the likely effects of implementing the actions contained in each GMP alternative are added to the effects of these other past, present, and reasonably foreseeable economic development actions, a long-term, minor to moderate, beneficial cumulative impact on gateway community economies could result. However, the impacts of the GMP actions on the local economy would constitute only a small component of this overall cumulative effect in the local gateway communities and a negligible portion of the overall cumulative effect on the Bay Area economy.

Tourism Industry Economy of San Francisco

The implementation of the actions in each of the GMP alternatives will contribute to the San Francisco tourism industry by providing many natural, cultural, educational, and recreational opportunities for visiting tourists. The tourists who visit the park play an important role in sustaining the tourism industry of the area by generating more business for San Francisco area hotels, restaurants, bars, retail shops, boat tours, and other tourism support businesses (e.g., bike rentals and tour companies).

San Francisco provides an abundant supply of tourist attractions that include, but are not limited to, music and art events, culinary adventures, ethnic neighborhoods, sporting events, historic sites, conventions, city tours, cable cars, world class shopping, unique neighborhoods, and community parks. These attractions all contribute to a critical mass of opportunities that makes San Francisco one of the premier tourist attractions in the country. Adding to the attractions of San Francisco is the natural openness and space of San Francisco Bay, the surrounding wild character of Golden Gate National Recreation Area, and the views of historic Alcatraz Island. Together these features create a unique setting that both contrasts and complements the urban feel of a great city—making the city a national and international travel destination. In other words, a synergistic effect of tourist attractions is present. For example, a large number of the out-of-state and international tourists will visit Alcatraz Island, the Marin Headlands, and Muir Woods National Monument in addition to the many urban sites and activities that are abundant in and around San Francisco. This combination or "package" of attractions and tourist opportunities in and around San Francisco results in a sustainable, thriving tourist

industry. This industry directly contributes to the local and regional economy.

When the likely effects of implementing the actions contained in each of the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable tourism industry actions and attractions, a long-term, moderate, beneficial cumulative impact on the economy would result. The impacts of each GMP alternative on the overall cumulative economy would contribute a long-term, minor, beneficial effect to the overall economy of San Francisco.

Regional Economy of the Overall Bay Area

As noted in the subsection on quality of life, the implementation of actions in each GMP alternative would continue to provide open space preservation, numerous recreation opportunities, facilities, and park settings for organized group activities, and other amenities that make the park an intrinsic, attractive component of the Bay Area community. This quality of life contribution also has an effect on the economy. By providing aesthetic, community, and recreational values, the park would continue to help make the Bay Area an attractive place for companies and talented professionals to call home. The Bay Area's quality of life becomes a draw for business and economic growth because of places like the park. The economic growth and success of Silicon Valley is a prime example of how economic growth can occur in a quality business location with a natural landscape backdrop. Similarly, the other city, county, and state parks and open spaces throughout the Bay Area contribute to making this region an attractive place to do business and to live. The region's cultural diversity and abundance of urban attractions also complement the parks and help to attract business growth.

When the likely effects of implementing the actions contained in each GMP alternative are added to the effects of these other past, present, and reasonably foreseeable actions and trends, a long-term, minor to moderate, beneficial cumulative impact on the economy would result. The impacts of the GMP alternative actions on the economy would contribute a small to medium component of this overall cumulative effect in the gateway communities and counties near the park, and would contribute an even smaller component to the overall cumulative effect when the overall Bay Area is considered.

TRANSPORTATION

The cumulative impacts on transportation resulting from the actions described in the GMP alternatives in combination with actions resulting from transportation projects and policies of other entities within the Bay Area are identified in this section. In preparing the cumulative impacts on transportation, the actions of the past, present, and foreseeable future were estimated. Input into these cumulative impacts included actions by others within the areas around the park, or potential actions that are described in various park plans already underway or recently completed. Transportation projects external to the park may result in an increase in visitation to the park by improving access for any of the travel modes discussed; or conversely, they may impede movement or burden transportation systems and reduce access. Cumulative transportation impacts of both external and park-originated projects are described below.

The transportation actions in the general management plan include expanding regional park ferry access to primary park sites in San Francisco Bay, new embarkations for Alcatraz Ferry, developing strategies for congestion management, and improving the intelligent transportation system and wayfinding applications. Throughout the park, improvements will be made to better connect the park trail system to the regional trail network and to local communities. In addition, improvements will be made to the

trail system in Marin and San Francisco counties that include sustainable alignments and design, improved accessibility, and wayfinding signs. In San Mateo, work will begin on a comprehensive trail plan that will guide the development of a trail network on park lands and will identify logical trail connections to strengthen the regional trail network.

These GMP actions, when combined with major past, present, and foreseeable future transportation actions of others, will have a cumulative impact to the transportation system that influences visitor access and circulation. At the Marin Headlands and Fort Baker area, there will be enhanced multimodal access to park sites. The roadway infrastructure would be rehabilitated or reconstructed without altering the historic character, and parking facilities would be improved. Additional transit options would be provided to and within the Marin Headlands and Fort Baker to improve access to the area. Pedestrian and bicycle access would be improved by closing and rerouting existing trails and constructing new trails. Connectivity—access to the park by all nonmotorized modes, and access to sites within the park by all modes—is likely to be improved. Hiking and biking across the Golden Gate Bridge to the Marin Headlands and Fort Baker will grow as a popular recreational activity; continued coordination between the National Park Service and the Golden Gate Bridge, Highway and Transportation District is required to address increased demands and safety issues. The cumulative impacts of implementing these actions could be long term, moderate to major, and beneficial.

In Marin County, the transportation element of the *Marin Countywide General Plan Update* of 2007 guides the list of transportation projects underway or already approved. Projects focus on increasing capacity of arterials and Highway 101; by reducing congestion in the eastern part of the county, these measures may make some park sites at Golden Gate National Recreation Area more easily accessible. Completion of these projects would represent a long-term, minor, beneficial cumulative impact on auto and transit access to Marin park lands, which are primarily in more rural west Marin County.

The *Marin Countywide General Plan* includes an explicitly stated policy to maintain West Marin's rural character, so roads in that area will continue to be two-lane only, with turning lanes, pullouts, and bicycle paths allowable. Muir Beach, Muir Woods National Monument, and Stinson Beach are accessed by these small roads, so congestion during peak periods can be expected to continue or to get worse if there are no programs to provide public transportation or improve bicycle routes. This scenario would have a long-term, minor to moderate, adverse cumulative impact on auto travel to West Marin sites.

Many of Golden Gate National Recreation Area's park sites in Marin and San Francisco counties are along San Francisco Bay. To improve visitor connection and circulation, planners are working to develop a Golden Gate National Recreation Area Water Shuttle Terminals Plan. Although only at the conceptual stage, the plan proposes a water shuttle system to connect park sites on the shore of the San Francisco Bay (Angel Island, Sausalito, Fort Baker, Crissy Field, Fort Mason) as well as the Ferry Building. Routes and destinations have not been finalized, yet. The system itself could be a significant attraction, unique within the national park system. Some visitors could be expected to take the water shuttle from one location to another without disembarking until reaching their point of origin, as a form of recreation in itself. If implemented, this system could have a long-term, moderate to major, beneficial cumulative effect on the connectivity of bayside sites, access to park sites by water, and an increase in the modes of travel.

In San Francisco County, the San Francisco Municipal Transportation Authority is implementing a Bus Rapid Transit system for

Van Ness Avenue, which is a collection of measures to provide rapid and reliable transit on Van Ness Avenue. The north end of this service terminates within two blocks of Upper Fort Mason and San Francisco Maritime National Historical Park. Given that this part of the city is already served by some transit operations, this project could have long-term, moderate, beneficial cumulative effects on visitor access and on connectivity to the park, allowing visitors to get to the north part of the city without driving and parking a vehicle.

A plan is being developed for the E-Line Streetcar Extension that proposes to extend streetcar service from the Embarcadero through San Francisco Maritime National Historical Park and a tunnel under Upper Fort Mason. The E-line Streetcar Extension connects Fisherman's Wharf to Lower Fort Mason and someday it could extend to Crissy Field. If this project were to go forward, it could have a long-term, major, beneficial cumulative effect on both connectivity and access to this area of Golden Gate National Recreation Area.

The Doyle Drive project will rehabilitate a major artery along the northern waterfront of San Francisco through several Golden Gate National Recreation Area sites. The purpose of the proposed project is to improve the seismic, structural, and traffic safety of Doyle Drive and its approach to the Golden Gate Bridge. The project is intended to substantially reduce the adverse effects of the current structure, including noise, visual impacts, and air pollution. The project would place portions of the low viaduct structure below grade or underground, thus removing it from the landscape and restoring visual connections between areas of the Presidio of San Francisco. The results of the project, a safer parkway with some segments underground, is likely to have long-term, major, beneficial cumulative impacts on access to this part of Golden Gate National Recreation Area by all modes, motorized and nonmotorized. Planned modifications in the Presidio of San Francisco, currently behind Doyle Drive, reconnect it to the shoreline, making it much more accessible by bicycle and foot.

In San Mateo County, the California Department of Transportation is working to reroute State Route 1 at Devil's Slide. This project involves boring two tunnels (one in each direction of traffic flow) beneath an unstable portion of a steep Pacific Coast hillside. This section of road has a long history of rockslides and land slippage, causing lengthy closures and millions of dollars in repair costs. This section of State Route 1 lies between two Golden Gate National Recreation Area's park sites: the Mori Point / Cattle Hill area and Rancho Corral de Tierra. It is likely that Point San Pedro will be added to the park in the foreseeable future. The completion of this project should expedite traffic, reduce traffic congestion, and make travel in the area more reliable, enabling a greater number of people to visit these areas of Golden Gate National Recreation Area. This would likely have a long-term, minor, beneficial cumulative impact on travel in the area. This improvement may also encourage more people to drive in the area, and therefore could trigger a need for more parking accommodation in the future.

The trail system of Golden Gate National Recreation Area and Muir Woods National Monument contribute to a larger county and regional trail network. For example, the Association of Bay Area Governments adopted the *San Francisco Bay Trail Plan* that proposes to create a trail encircling the San Francisco Bay. A portion of the trail connects with park sites within Golden Gate National Recreation Area in Marin and San Francisco counties. In addition, the California Coastal Trail, a 1,200-mile-long trail between Oregon and Mexico, is integrated with the park's trail network in Marin, San Francisco, and San Mateo counties. The sections of the San Francisco Bay trail and the California Coastal Trail could increase pedestrian and bicycle access to areas throughout the park. These developments would result in a long-term,

minor, beneficial cumulative effect on pedestrian and bicycle access to this area, and connectivity to regional transportation.

The Golden Gate National Parks Conservancy developed a trail initiative, "Trails Forever," to establish a world-class trail system and protect park resources. Trails Forever is likely to increase pedestrian access (and bicycle access as permitted) to all areas of Golden Gate National Recreation Area by establishing and repairing trails that connect to surrounding areas, as well as those that connect sites within each park area. As the Trails Forever efforts continue, they are likely to have a long-term, moderate, beneficial cumulative effect on safe, expanded access, connectivity, and circulation to more parts of Golden Gate National Recreation Area.

The wide variety of past, present, and foreseeable future transportation actions resulting from the management of the park and actions of other entities throughout Marin, San Francisco, and San Mateo counties, combined with the actions described in the GMP alternatives would have long-term, moderate to major, beneficial cumulative impacts on the transportation and trail systems.

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

Some past, present and foreseeable future actions being undertaken outside of this general management plan would have impacts on park operations. These "outside" actions, added to the actions proposed in the GMP alternatives, would result in the cumulative impacts on park operations explored below.

Park partners engage in a wide variety of activities, including providing interpretation of the park, running concessions such as bookstores and hostels, and organizing volunteers to improve the park. One example of partner support of park operations is fundraising for the renovation of facilities. Increased park staff levels in combination with the actions that park partners have taken and may take in the future would result in beneficial impacts on park operations, including improvements to mission critical assets, improvements to natural and cultural resources, and increased ability to reach out to the community and leverage staff work with volunteer and partner efforts. This would result in major, long-term, beneficial impacts on park operations for all action alternatives. In the no-action alternative, with staff levels remaining at current levels, the ability to further leverage partner support would be limited and would have little additional impact, although the continuing impact of staff and partner support is major and beneficial.

Agency and partner decisions to share facilities with the National Park Service, such as potentially in San Mateo County, would result in increased operating efficiencies through resource and space sharing, increased quality of working relationships with other organizations, and coordination on land uses; this would have moderate, long-term, beneficial impact to all action alternatives.

The National Park Service is pursuing new sustainability measures on Alcatraz Island, including solar power and a submarine electric line to be laid from the peninsula to the island. Those projects, in combination with the GMP policy to improve sustainability, would have moderate to major, beneficial, long-term impacts on the park operations for all action alternatives.

If the park pursues future acquisition of lands and the development of facilities not addressed in the GMP alternatives, given the estimated budget and staffing needs of the alternatives, the park budgets and staff would be adversely impacted by being diverted from planned actions. The resulting impact would be long term, minor to moderate, and adverse for all action alternatives.

The current and future expected high cost of housing in the San Francisco Bay Area could make the recruitment and retention of park and partner staff challenging. The action alternatives each propose substantial numbers of new staff. Park and partner salaries are frequently lower than needed to afford adequate housing in the Bay Area. Additionally, alternatives 2 and 3 propose reductions in park and partner housing. Given these factors, potential staff may find it difficult to find adequate and affordable housing, and therefore may choose not to work at the park. Not meeting staffing needs identified in the alternatives would result in long-term, moderate to major, adverse impacts on park operations.

The major, long-term, beneficial impacts on operations of increased staffing, in combination with the impacts of partner support of park operations, would result in major, long-term, beneficial impacts on park operations in the action alternatives. In the no-action alternative, with staff levels remaining at current levels, the ability to further leverage partner support would be limited and would have little additional impact, although the continuing impact of staff and partner support is major and beneficial. Administrative and interpretive office space sharing with other agencies would have moderate, long-term, beneficial impact. Sustainable energy projects on Alcatraz Island in combination with the GMP policy on sustainability would result in moderate to major, beneficial, long-term impacts on park operations. The impact of pursuing land acquisition or facility development outside of GMP proposals would be long term, minor to moderate, and adverse. Not meeting staffing needs identified in the alternatives would result in long-term, moderate to major, adverse impacts on park operations.

CUMULATIVE IMPACT ANALYSIS AT MUIR WOODS NATIONAL MONUMENT

METHODOLOGY

See the discussion under "Cumulative Impact Analysis at Golden Gate National Recreation Area."

NATURAL RESOURCES

A number of plans and projects could have cumulative impacts on natural resources. Plans and projects that have a relationship to this general management plan are identified and described in appendix B. Those plans and projects that are most relevant to natural resources and could contribute to cumulative impacts on this topic, a subset of those included in appendix B, include the Redwood Creek Watershed Vision and various restoration projects in the watershed; the Marin County transportation plan; the Muir Woods pilot shuttle; the Mount Tamalpais State Park management plan; the Golden Gate National Recreation Area / Muir Woods National Monument fire management plan; the management of lands adjacent to the monument; and past land use practices in the region. Cumulative impacts for Muir Woods National Monument are similar to those described for Golden Gate National Recreation Area, with a few exceptions noted below in the analysis.

Carbon Footprint and Air Quality

All of the plans and projects mentioned in the introduction to this section would have cumulative impacts on carbon footprint and air quality. County transportation plans and projects aimed at reducing personal automobile use and improving alternative transportation would have beneficial cumulative impacts by reducing transportation-related emissions. The Muir Woods National Monument pilot shuttle would continue to reduce emissions from personal automobile use, lower the carbon footprint of the monument and improving air quality. Projects aimed at improving ecosystems and enhancing natural resources would result in adverse cumulative impacts in the short term, but would be outweighed by long-term reductions in emissions and the resultant improvement in air quality. The same would be true for the management of adjacent public lands, where near-term projects would have short-term adverse impacts on carbon footprint and air quality, but long-term objectives to reduce energy use and emissions and improve the condition of natural systems would have long-term beneficial cumulative impacts. Regional land protection efforts would continue to preserve open space that removes land available for development and provides air quality benefits. The management of private lands in the region would likely continue to result in adverse impacts on carbon footprint and air quality as they would continue to be sources of energy use and air quality emissions that could increase over time as densities increase.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a cumulative adverse impact on carbon footprint and air quality in the short term and a beneficial cumulative impact on carbon footprint and air quality over the long term. The actions contained in the GMP alternatives would contribute a very small increment to this cumulative impact.

Soils and Geologic Resources and Processes

All of the plans and projects mentioned in the introduction to this section would have cumulative impacts on soils and geologic resources and processes. County transportation plans and projects would modify roadways that would likely result in adverse impacts on roadside soils and geologic resources and would contribute to changes in the functionality of geologic processes in the area. Projects aimed at improving ecosystems and enhancing natural resources could result in adverse cumulative impacts in the short term, but would be outweighed by long-term improvements to function and integrity of soils and natural geologic processes. The same would be true for the management of adjacent public lands, where near-term projects could have short-term adverse impacts on soils and geologic resources, but long-term objectives to improve natural systems would have long-term beneficial cumulative impacts on soils and geologic processes. Regional land protection efforts would continue to preserve open space and protect soils and geologic resources. The management of private lands in the region would continue to have adverse and beneficial impacts on soils and geologic processes depending on the nature of land use and stewardship practices.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a cumulative beneficial impact on soils and geologic resources and processes. The actions contained in the GMP alternatives would contribute a small increment to this cumulative impact.

Water Resources and Hydrologic Processes

All of the plans and projects mentioned in the introduction to this section would have cumulative impacts on water resources and hydrologic processes. County transportation plans and projects would modify roadways that could modify surface water flow and drainage. Roadway projects would also likely result in soil erosion and generate urban pollutants that would adversely impact water quality. Conversely, certain projects would reduce sedimentation and improve the conveyance of water—beneficial impacts. Projects aimed at improving ecosystems and enhancing natural resources (i.e., Big Lagoon restoration, Lower Redwood Creek floodplain restoration, Fern Creek riparian fencing, mission blue butterfly habitat restoration, Coast Trail habitat enhancement projects, sediment reduction projects, and the decommissioning of Muir Woods Road) could result in adverse cumulative impacts on water resources and water quality in the short term, but would be outweighed by long-term improvements to the integrity and function of water resources, especially for wetlands, floodplains, and natural creek processes. These projects would benefit water quality by reducing erosion and sediment transport and restoring Redwood Creek and the area's natural drainage patterns. The impacts of the project would be beneficial when considered with other projects in the watershed that also reduce sediment and nutrient transport and generally enhance the watershed's water quality. The same would be true for the management of adjacent public lands: short-term projects could have short-term adverse impacts on water resources (including water quality and quantity); but would result in long-term beneficial cumulative impacts on water resources and hydrologic processes. Regional land protection efforts would continue to preserve open space and protect water resources. The management of private lands in the region would continue to have adverse and beneficial impacts on water resources and hydrologic processes depending on the nature of land use and stewardship practices.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present,

and reasonably foreseeable actions previously described, there would be a cumulative beneficial impact on water resources and hydrologic processes. The actions contained in the GMP alternatives would contribute a small increment to this cumulative impact.

Habitat (vegetation and wildlife) and Special Status Species (federal and state threatened and endangered species)

All of the plans and projects mentioned in the introduction to this section would have cumulative impacts on vegetation and wildlife habitat. County transportation plans and projects would modify roadways that could alter the integrity of native habitat, increase habitat fragmentation, and introduce nonnative plants and animals that could displace and adversely affect native species, including special status species. Roadway projects would also likely result in soil erosion and generate urban pollutants that would adversely impact aquatic habitats. Conversely, certain projects would reduce impacts from roadways and improve migration corridors. Restoration projects aimed at improving ecosystems and enhancing natural resources include the following:

- Big Lagoon restoration
- Lower Redwood Creek floodplain restoration
- Fern Creek riparian fencing
- mission blue butterfly habitat restoration
- Coast Trail habitat enhancement projects
- sediment reduction projects
- decommissioning of Muir Woods Road
- park fire road rehabilitation
- Green Gulch Farm–removal of concrete lining from tributary
- Kent Canyon culvert replacement

These could result in adverse cumulative impacts on native habitat in the short term, but would be outweighed by long-term improvements to the integrity and function of habitat. These projects would improve water quality by reducing sediment inputs, prevent the trampling of vegetation, remove invasive riparian plants, improve fish passage, create pool habitat, and remove artificial bank protection. The 2003 and 2007 Lower Redwood Creek projects have direct benefits for salmonids by expanding and enhancing available winter and summer rearing habitat. Therefore, the impacts of the project, considered with the beneficial impacts of other local projects, would be cumulatively beneficial.

The same would be true for the management of adjacent public lands, where near-term projects could have short-term adverse impacts on habitat, but long-term objectives to improve natural systems would have long-term beneficial cumulative impacts on habitat integrity and function. Regional land protection efforts would continue to preserve open space and protect a variety of habitat types. The management of private lands in the region would continue to have adverse and beneficial impacts on vegetation and wildlife habitat depending on the nature of land use and stewardship practices.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the effects of other past, present, and reasonably foreseeable actions previously described, there would be a cumulative beneficial impact on vegetation and wildlife habitat. Although impacts on local special status species and their habitat in the project area would be mitigated to minimize potential impacts and impacts of other projects in the area would generally be beneficial, impacts from urbanization of the region would continue to result in habitat

loss and the cumulative impact to most special status species and their habitat would be adverse. The actions contained in the GMP alternatives would contribute a small increment to this cumulative impact.

CULTURAL RESOURCES

A number of past, present, and ongoing plans, programs, and projects could have cumulative impacts on cultural resources, if implemented. Plans, programs, and projects that have a relationship to this general management plan are described in the "Relationship of This Plan to Other Plans" section in part 1 and in "Appendix B: Description of Management Plans Related to this Plan." Those plans and projects that are most relevant to and could contribute to cumulative impacts on cultural resources at Muir Woods National Monument include the following:

- National Park Service restoration plans such as the *Redwood Creek Watershed: Vision for the Future* (2003)
- State and regional plans such as the California Department of Parks and Recreation *Mount Tamalpais State Park General Plan* (1980)
- County and local plans such as the *Marin Countywide Plan* (2007) and amended [2009]

Past human use and practices and management of lands in and near Muir Woods National Monument, such as construction associated with urban, suburban, and recreational development, have also contributed to cumulative impacts on cultural resources.

Archeological Resources

Implementation of NPS restoration plans, state and regional plans, and county and local plans would have generally beneficial cumulative impacts on archeological resources if those plans specifically included an emphasis on protection and preservation of cultural resources and mitigation if sites cannot be avoided. However, generally speaking, past human use and management of lands in and near the monument, such as construction associated with urban, suburban, and recreational development, have generally had adverse impacts on archeological resources because of the unknown number of archeological sites that may have been lost or degraded as a result of ground disturbing operations.

When the likely impacts of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present, and reasonably foreseeable actions previously described, there would be long-term, adverse, cumulative impacts on archeological resources on lands in and near the monument. The actions contained in the GMP alternatives, however, would generally contribute a small beneficial increment to the overall adverse cumulative impacts on archeological resources.

Historic Structures

National Park Service restoration plans, state and regional plans, and county and local plans all provide for the protection and preservation of historic buildings and their architectural values and, therefore, would contribute to beneficial cumulative impacts on historic buildings, if implemented. Past human use and management of lands in and near the monument, such as construction associated with urban, suburban, and recreational development, have generally had adverse impacts on historic buildings, resulting in the loss of historic buildings and historic fabric.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present, and reasonably foreseeable actions previously described, there would be a long-

term, minor, beneficial cumulative impact to historic buildings. The actions contained in the GMP alternatives would contribute a small increment to these overall cumulative impacts.

Cultural Landscape Resources

National Park Service restoration plans, state and regional plans, and county and local plans all provide for the protection and preservation of cultural landscape resources and, therefore, would contribute to beneficial cumulative impacts on cultural landscape resources, if implemented. Past human use and management of lands in and near the monument, such as construction associated with urban, suburban, and recreational development, have generally had adverse impacts on cultural landscapes, resulting in the loss or degradation of numerous cultural landscape resources.

When the likely effects of implementing the actions contained in the GMP alternatives are added to the impacts of other past, present, and reasonably foreseeable actions previously described, there would be a long-term, minor to moderate, beneficial cumulative impact to cultural landscape resources. However, the actions contained in the GMP alternatives would contribute only a small increment to the overall cumulative impacts on cultural landscape resources.

Park Collections

The cumulative impacts on the park collections are addressed in the "Golden Gate National Recreation Area" section.

VISITOR USE AND EXPERIENCE

The cumulative impacts for visitor use and experience at Muir Woods National Monument are the same as those described for Golden Gate National Recreation Area.

SOCIAL AND ECONOMIC ENVIRONMENT

Along with the actions identified in this general management plan for Muir Woods National Monument, the actions identified in a number of plans and projects in the local gateway communities, the three adjacent counties, and the overall San Francisco Bay Area could contribute to cumulative impacts on the social and economic environment in the area. Plans and projects that have a relationship to this general management plan are identified and described in the "Relationship of This Plan to Other Plans" section in part 1 and in "Appendix B: Description of Management Plans Related to this Plan." These other plans and management actions all have effects on the social and economic environment, both individually and collectively. These effects mainly relate to the quality of life of local residents and the economy. The cumulative contributions to the quality of life and economy could extend throughout the gateway communities, the three adjacent counties, and the overall Bay Area.

In relationship to the social and economic environment, the cumulative effect of implementing these other plans and projects and the GMP alternatives for Muir Woods National Monument would be quite similar to the cumulative effect of implementing these other plans and projects and the GMP alternatives for Golden Gate National Recreation Area. Therefore, to avoid repeating analyses and conclusions, please refer to the section titled "Cumulative Impact Analysis at Golden Gate National Recreation Area (including Alcatraz Island)." However, the transportation component of the monument's GMP alternatives is unique to this park. The transportation actions included in the GMP action alternatives could affect traffic patterns, park accessibility, and park visitor contributions to the local economy in the gateway communities and Marin County. Thus, these actions could influence the local social and

economic environment. A discussion and analysis of this topic are provided below.

The no-action alternative and alternatives 1, 2, and 3 include measures to expand shuttle services to and from the monument. The shuttle service would originate at selected transit hubs in Marin County. Although all action alternatives would include actions that address this change, alternative 2 includes actions that would yield the greatest amount of change, because under this alternative, the majority of personal motorized vehicles would be prohibited from entering the park. Under alternative 2, all park visitors would access the park via the shuttle, by bicycle, or by foot. The primary goal for these actions is to substantially reduce the impacts of motorized vehicular use in and around the park; this would reduce motor vehicle impacts such as noise, air pollution, traffic, and overflow parking problems. While minimizing these impacts, the proposed actions would also provide an alternate, public transportation option for local residents who otherwise may not have easy access to the park. These actions also would reduce traffic on some Marin County roads that lead to the park. All of these impacts could be beneficial to the quality of life for local residents in Marin County. Alternative 2 would yield the greatest benefit in terms of removing individual vehicles from local roads. However, because these actions could reduce the amount of vehicular traffic en route to the park, a reduction in local business activity may be noticed in the local gateway communities. Fewer people would be driving to and from the park through the local towns, and thus, fewer people would be stopping at local restaurants, stores, and other businesses. As described in the "Environmental Consequences" section, this could result in an adverse impact to the local economy.

GMP actions that would affect the local economy and the quality of life for local residents could be complemented by the transportation plan actions of the local governments in Marin County and the local and regional transit authorities. These entities will continue to improve and expand public transportation options in Marin County and beyond. As the public transportation network grows and becomes more refined, local and regional residents will have more options to visit the park, with a probable reduction in transit time. These efforts will contribute to quality of life by improving geographic accessibility and reducing traffic congestion. As for economic impacts, because local and regional transportation planning and projects would likely conform to municipal and county master plans, some commercial zoning sectors in Marin County may shift over the years to become concentrated around mass transit hubs. Thus, the initial impacts on local businesses from a reduction in vehicular traffic may eventually be offset by a gain in local business activity in and around the planned transit hub areas.

When the likely effects of implementing the actions contained in each of the GMP alternatives for the monument are added to the effects of these other past, present, and reasonably foreseeable transportation actions, a long-term, minor to moderate, beneficial cumulative impact on the quality of life for local residents could result.

The impacts of the actions of each GMP alternative on the local economy would constitute a small portion of this overall cumulative effect in the gateway communities and Marin County. When the likely effects of implementing the GMP actions are added to the effects of these other past, present, and reasonably foreseeable transportation actions, a, minor, adverse cumulative impact on the local economy could result. However, over time, the cumulative impact could become negligible or beneficial as the transportation systems become predictable and local businesses adapt.

TRANSPORTATION

See the transportation discussion under "Cumulative Impact Analysis at Golden Gate National Recreation Area."

PARK MANAGEMENT, OPERATIONS, AND FACILITIES

Staffing increases described in the analysis in combination with actions that partners may take would result in long-term, beneficial impacts on park operations, including improvements to mission critical assets and natural and cultural resources, and increased ability to reach out to the community and leverage staff work with volunteer and partner efforts. This would result in major, long-term, beneficial impact to park operations for all action alternatives. In the no-action alternative, with staff levels remaining the same as existing, the ability to further leverage partner support would be limited and would have little additional impact, although the continuing impact of staff and partner support is major and beneficial.

If the park pursues future acquisition of lands and development of facilities not addressed in the GMP alternatives, given the estimated budget and staffing needs of the alternatives, the park budgets and staff would be adversely impacted by being diverted from planned actions. The resulting impact would be long term, minor to moderate, and adverse.

The current and future expected high cost of housing in the San Francisco Bay Area could make the recruitment and retention of park and partner staff challenging. The action alternatives each propose substantial numbers of new staff. Park and partner salaries are frequently lower than needed to afford adequate housing in the Bay Area. Given these factors, potential staff may find it difficult to find adequate and affordable housing, and therefore may choose not to work at the park. Not meeting staffing needs identified in the alternatives would result in long-term, moderate to major, adverse impacts on park operations.

The major, long-term, beneficial impacts on operations of increased staffing, in combination with the impacts of partner support of park operations, would result in major, long-term, beneficial impacts on park operations in the action alternatives. In the no-action alternative, with staff levels remaining at current levels, the ability to further leverage partner support would be limited and would have little additional impact, although the continuing impact of staff and partner support is major and beneficial. The impact of pursuing land acquisition or facility development outside of GMP proposals would be long term, minor to moderate, and adverse. Not meeting staffing needs due to the high cost of housing would result in long-term, moderate to major, adverse impacts on park operations.

ADDITIONAL ANALYSES

NATURAL OR DEPLETABLE RESOURCE REQUIREMENTS AND CONSERVATION POTENTIAL

None of the alternatives being considered would result in the extraction of new resources from the park or monument. In all of the alternatives, ecological principles would be applied to ensure that the natural resources of the park and monument were maintained and protected. Certain resources could continue to be collected for scientific and educational purposes, but the specimens would be stored in the NPS collection. Agricultural operations on NPS lands would continue to result in the extraction of resources through the harvesting of crops, which assist in meeting cultural landscape objectives. The fields would be managed to sustain this harvest. Implementation of the alternatives would result in the use of limited natural resources and energy for construction and operation of new recreational facilities and for restoration activities. New development would be designed to be sustainable to the maximum extent practicable. The use and consumption of fuel and other nonrenewable resources for NPS operations, activities, and development associated with the alternatives would be very small in comparison to that of the region. Overall, the impact on this topic resulting from implementation of this general management plan would likely be negligible.

EFFECTS ON ENERGY REQUIREMENTS AND CONSERVATION

The CEQ guidelines for implementing the National Environmental Policy Act require examination of energy requirements and conservation potential in environmental impact statements. Park Service staff strive to incorporate the principles of sustainable design and development into all facilities and park operations. Sustainability can be described as the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short-term and long-term environmental impacts of developments and other activities through resource conservation, recycling, waste minimization, and the use of energy efficient and ecologically responsible materials and techniques.

The NPS *Guiding Principles of Sustainable Design* (1993) provides a basis for achieving sustainability in facility planning and design, emphasizes the importance of biodiversity, and encourages responsible decisions. The guidebook describes principles to be used in the design and management of visitor facilities that emphasize environmental sensitivity in construction, use of nontoxic materials, resource conservation, recycling, and integration of visitors with natural and cultural settings. The National Park Service would minimize energy costs, eliminate waste, and conserve energy resources by using energy efficient and cost effective technology wherever possible. Recent examples include projects to install photovoltaic panels on the NPS headquarters building at Fort Mason and projects to pursue alternative energy options at Alcatraz Island (both part of the no-action alternative). Energy efficiency would also be incorporated into any decision-making process during the design or acquisition of facilities, as well as all decisions affecting park operations.

The use of value analysis and value engineering, including life cycle cost analysis, would be performed to examine energy, environmental, and economic implications of proposed NPS development. NPS staff would encourage suppliers, permittees, and

contractors to follow sustainable practices and would address sustainable park and park partner practices in interpretive programs.

The energy requirements of the plan's alternatives (for Alcatraz Island, Muir Woods, and the three-county area) were examined. At Muir Woods, propane (gallons of fuel) and electricity (kilowatt hours per year) usage would be reduced under all of the action alternatives; while the use of natural gas to provide expanded shuttle service would increase substantially.

On Alcatraz Island, diesel use (gallons of fuel) and electricity use (kilowatt hours per year) would be increased under all of the action alternatives.

At park sites within the three-county area of Golden Gate National Recreation Area, diesel use (gallons of fuel) and electricity use (kilowatt hours per year) would be slightly reduced under all of the action alternatives. In San Mateo County, energy requirements would increase under all of the action alternatives because facilities would be developed where the National Park Service currently has no recreational or operational presence.

Overall, compared to energy requirements and use in the local area or the region, energy consumption by the National Park Service would be negligible. Consequently, any adverse impacts relating to energy use, availability, or conservation would be negligible.

IRRETRIEVABLE OR IRREVERSIBLE COMMITMENTS OF RESOURCES

The energy requirements identified above (for all alternatives) would result in an irreversible commitment of resources. Furthermore, construction materials, including gravel and other rock and earthen materials, would be irretrievably committed toward the construction of new recreational and operations facilities. National Park Service employee time would be committed to implementation of various elements of the plan, which would also constitute an irretrievable commitment of resources. There would be no permanent effects on park resources resulting from these actions.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as impacts that cannot be fully mitigated or avoided. Adverse impacts on natural and cultural resources and visitor experience could occur in some areas throughout the two parks as a result of public use (e.g., impacts on resources from concentrated visitor use or vandalism) or NPS management activities (e.g., impacts from construction activities or emergency response).

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY OF THE ENVIRONMENT

Under the no-action alternative, short-term uses of the environment such as public use of the area would continue. Public use and new recreational development would be expanded under one or more of the action alternatives, resulting in potential temporary disturbances to vegetation communities, various species of wildlife, and visitor access and experiences. The use of construction phasing and/or implementation of mitigation measures would reduce or eliminate the potential for most of these short-term impacts.

Under all of the alternatives, most of the park lands would be protected in a natural state and would maintain their long-term productivity. Only a small percentage of the park and monument would be maintained as developed areas. Furthermore, the action alternatives include improvements to existing site conditions and the restoration of natural habitats and steam systems. These actions

would improve ecological function and the long-term productivity of the environment.

COASTAL ZONE MANAGEMENT ACT CONSISTENCY

The Coastal Zone Management Act of 1972 (CZMA) was enacted by Congress to encourage states to protect, preserve, develop, and, when possible, restore or enhance valuable natural coastal resources. The program is a voluntary partnership between the federal government and the U.S. coastal states. If a proposed project is a federal action requiring NEPA review and the project is in the coastal zone, then a CZMA consistency certification must be prepared.

The San Francisco Bay Conservation and Development Commission and the California Coastal Commission are the California State agencies whose coastal management programs are consistent with the Coastal Zone Management Act.

The California Coastal program was approved as part of a National Coastal Zone Management Program authorized by the Coastal Zone Management Act of 1972. The California Coastal Commission was established through the adoption of the California Coastal Act of 1976 and is an independent state agency whose mission is to "protect, conserve, restore, and enhance environmental and human-based resources of the California coast and ocean for environmentally sustainable and prudent use by current and future generations." In keeping with their mission, the California Coastal Commission is an independent state agency responsible for planning and review of activities within the coastal zone through specific policies outlined in the California Coastal Act such as shoreline public access and recreation, lower cost visitor accommodations, terrestrial and marine habitat protection, visual resources, landform alteration, agricultural lands, commercial fisheries, industrial uses, water quality, offshore oil and gas development, transportation, development design, power plants, ports, and public works." Although federally owned lands within the coastal zone are exempt from the act, federal agencies are encouraged to coordinate and cooperate with the state to meet the purposes of the California Coastal Act and be consistent with the policies of the California Coastal Act.

The San Francisco Bay Conservation and Development Commission (BCDC) is responsible for carrying out the provisions of the McAteer-Petris Act of 1965 and the San Francisco Bay Plan. The San Francisco Bay Plan guides the protection and use of the San Francisco Bay and its shoreline. The commission is charged with issuing or denying permit applications for placing fill, extracting materials, or changing the use of any land, water, or structure within the area of its jurisdiction. Permit applications for such activities must account for the provisions and policies of the McAteer-Petris Act and the San Francisco Bay Plan.

Based on the analysis within this general management plan/environmental impact statement, the preferred alternative should, over the long term, result in beneficial effects to coastal resources by (1) providing and managing public use within coastal areas; (2) reducing opportunities for soil disturbance and erosion that could impact water quality and aquatic habitats; and (3) protecting and conserving important and sensitive natural resources.

Based on the anticipated benefits to coastal resources, the National Park Service has determined that the preferred alternative presented in this plan is consistent with the Coastal Zone Management Act. A copy of this plan was sent to the Federal Consistency Coordinator at the California Coastal Commission, requesting their concurrence with the determination. A copy of the plan was also sent to the San Francisco Bay Conservation and Development Commission.

The San Francisco Bay Conservation and Development Commission provided comments on the draft general management plan and the NPS consistency determination in December of 2011. The San Francisco Bay Conservation and Development Commission stated the requirement for project-specific consultation as components of the general management plan are carried out in the future within their jurisdiction. The commission also summarized the major policies of the Bay plan that must be considered by the National Park Service during site-specific planning and development efforts, including policies related to Public Access, Transportation, Recreation, Fish and Wildlife, and Climate Change. This letter is included in appendix G.

The California Coastal Commission provided comments on the draft general management plan and concurred with the NPS consistency determination in December 2012. Their letter is included in appendix H. The National Park Service will continue to coordinate and consult with both the San Francisco Bay Conservation and Development Commission and the California Coastal Commission, and other federal, state, and local agencies, as specific components of this plan are carried out.

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PUBLIC INVOLVEMENT

GENERAL

This section describes the processes employed by the National Park Service to include the public in the development of the general management plan / environmental impact statement for Golden Gate National Recreation Area and Muir Woods National Monument. The plan represents important contributions from not only NPS staff, but hundreds of members of the public: individuals, organizations, and a variety of local, state, and federal public agencies—all of whom are interested in the vision that will successfully guide the park in the future. To prepare this plan, the park actively sought out and regularly consulted with existing and potential visitors, neighbors, American Indian scientists and scholars, concessioners, neighboring communities, other partners, and government agencies. The park adhered to NPS policy by inviting the public to participate in planning and decision making as a way to ensure that the National Park Service fully understands and considers the public's interests in the park, which is part of the public's national heritage, cultural traditions, and community surroundings.

Throughout the multiyear planning process, the National Park Service used a variety of methods to regularly communicate with the public interested in the development of the general management plan. The foundation of two-way communication was the preparation of informative newsletters and the many open house-style public meetings held by the park in neighboring communities.

PLAN DEVELOPMENT

Scoping: Public involvement in the plan began with an invitation to participate in scoping: identifying the scope, or range, of the issues that the plan would address. The legal requirement (Notice of Intent) of informing the public that the National Park Service was beginning to prepare an environmental impact statement for a general management plan was published in the *Federal Register*, Vol. 71, No. 60, March 29, 2006. Immediately afterwards, a newsletter (the first of five), was sent to more than 4,000 addresses on the park's mailing list. It described the general management plan process and invited people to describe what they value and like most about the park, what they like least, their suggestions for management, their major concerns for the future of the park, and any other comments they wanted to provide to the NPS planning team. The newsletter included a postage-paid reply form. Nearly 300 electronic and mailed comments were received in response to the newsletter.

In tandem with the newsletter, the National Park Service held five public open houses in Marin, San Francisco, and San Mateo counties to gather additional input. The Park Service also hosted focused meetings with environmental, historic, and diversity organizations, as well as meetings with American Indian representatives, current park partners, and groups that included some of the park founders in order to collect broad input.

The information gathered in these outreach activities was summarized in a newsletter (2),"What We Heard," which was distributed in February 2007. The newsletter also incorporated comments gathered at scoping meetings held with park staff in 2001, 2003, and 2006 as the National Park Service was beginning to formulate the planning process.

With the distribution of newsletter 2, the National Park Service began to routinely employ a set of tools that included the following:

- feedback sessions at quarterly open houses held in neighboring communities
- distribution of project information by e-mail (approximately 1,000 addresses at present)
- translation of newsletters or parts of newsletters into Chinese and Spanish
- distribution of project information at other park sites such as Alcatraz Island and Muir Woods which are popular with national and international visitors
- posting of project information on the park's website: www.nps.gov/goga
- posting of project information on the NPS planning website: http://parkplanning.nps.gov/goga
- briefings for park partners and interested organizations such as the Crissy Field Center's IYELL program, People for the Parks, the City of Pacifica Golden Gate National Recreation Area Advisory Committee, and the San Francisco Planning and Urban Research Association (SPUR)

All public scoping comments and the NPS analysis of those comments were documented in a report, *Scoping Summary 2006, General Management Plan,* and made available at the two websites. The comments and analysis helped guide the National Park Service to develop alternative ways to address the planning issues in the plan.

Alternatives Development

Public involvement in developing the management alternatives described in this general management plan was focused on two tasks. First, a set of alternative concepts was prepared to describe a range of different ways that the scoping issues could be addressed. These different concepts were the main subject of newsletter (3) which was distributed in fall of 2007. Public feedback gathered in a variety of formats was generally positive.

Second, a robust description of "Preliminary Alternatives" was distributed by mail in the spring of 2008 (48-page newsletter 4.) The alternatives described how the different concepts were leading to different park management actions. The newsletter included short narratives for each alternative describing the future conditions of resources and visitor experiences at the various park sites, along with a set of zoning maps. It invited the public to send comments to the National Park Service between April 29 and August 1, 2008.

The National Park Service employed some additional tools to share the preliminary alternatives and gather feedback. These tools included the following:

- "Planning Tables" hosted by members of the planning team at special events and park sites such as Marin City, Tennessee Valley, Rodeo Beach, Half Moon Bay State Beach, Crissy Field, and Point Reyes National Seashore
- "Planning Walks" where the public was invited to walk various sites with members of the planning team
- hikes in the park led by NPS interpretive rangers
- special community meetings, as with the residents of Muir Beach

The core public involvement activity centered on a series of five public open houses dedicated to discussion of the preliminary alternatives. These were held in June 2008, in Marin (Sausalito), San Francisco, and San Mateo communities (Princeton and Woodside). These workshops were attended by approximately 300 people.

As a result, the National Park Service gathered a substantial volume of comments. More than 200 responses were posted by individuals and groups at the park website.

More than 180 letters and comment forms were received from a variety of individuals, organizations, and agencies. Overall, more than 45 people provided some 1,500 substantive comments on the preliminary alternatives. All public comments, petitions, and letters, including the planning team's analysis of those comments, were documented in a report, *Summary of Public Comments on the Preliminary Alternatives,* and made available at the NPS planning website in 2008.

Draft General Management Plan / Environmental Impact Statement

The draft general management plan / environmental impact statement was released to the public on September 9, 2011. Three public meetings were held in the Bay Area to review the draft plan and receive public input: September 24 in San Francisco, September 27 in Pacifica, and October 4 in Mill Valley. The public review period was 90 days, and ended on December 9, 2011. The National Park Service also held meetings with affected agencies on September 26, 2011.

A total of 541 pieces of correspondence about the draft plan were received from individuals, organizations, and agencies. Comments and responses are summarized below. Agency letters are reproduced in appendix H.

The National Park Service has responded to all substantive comments raised by the public as part of developing the Final General Management Plan / Environmental Impact Statement. In some cases, the content of the document was modified in response to public comments.

CONSULTATION WITH OTHER AGENCIES, OFFICIALS, AND ORGANIZATIONS

SECTION 7 CONSULTATION

The Endangered Species Act of 1973, as amended, requires in section 7 (a)(2) that each federal agency, in consultation with the Secretary of the Interior, ensure that any action the agency authorizes, funds, or carries out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. This section sets out the consultation process as implemented by regulation 50 CFR 402.

During the preparation of the draft general management plan, the National Park Service contacted the Sacramento office of the U.S. Fish and Wildlife Service and the Santa Rosa office of NOAA-National Marine Fisheries Service to begin the consultation process for section 7 of the Endangered Species Act. In accordance with the Endangered Species Act and relevant regulations at 50 CFR 402, the National Park Service determined that this general management plan is not likely to adversely affect any federal listed threatened or endangered species.

In September 2011, the National Park Service sent copies of the Draft General Management Plan / Environmental Impact Statement to the above offices for review. The document included an embedded biological assessment analysis to conform with the requirements of section 7 of the Endangered Species Act.

The National Park Service received consultation correspondence from NOAA–National Marine Fisheries Service in a letter dated November 10, 2011. The National Marine Fisheries Service submitted general supportive comments regarding section 7 compliance and one correction to a species listing status. Also, the general habitat conservation suggestions in the letter are consistent with National Park Service management policies for natural resource management in the park. Because the letter did not officially state that the NOAA-National Marine Fisheries Service concurred with the determinations of effect in the Draft General Management Plan / Environmental Impact Statement and the National Park Service followed up with an e-mail inquiry dated March 12, 2013, to confirm the concurrence. At the time of printing this final plan, the National Park Service has not received a follow-up confirmation response. However, considering the generally supportive comments in the above-referenced review letter and the commitment to consult with NOAA-National Marine Fisheries Service on the implementation of actions in the plan, the National Park Service concluded informal consultation with NOAA-National Marine Fisheries Service.

At the time of the printing of this final plan, the National Park Service has not yet received correspondence from the U.S. Fish and Wildlife Service regarding its review of the plan as it relates to section 7 consultation or concurrence. The only review correspondence received from the agency related to seabird habitat protection measures in a letter dated December 8, 2011. To assure compliance with consultation requirements under section 7, the National Park Service has made additional attempts to seek section 7 consultation input from the U.S. Fish and Wildlife Service.

Subsequent to the public and agency review period for the Draft General Management Plan / Environmental Impact Statement in the autumn of 2011, the National Park Service submitted a follow-up concurrence request to the U.S. Fish and Wildlife Service (letter dated March 5, 2013. At the time of the printing of this document, the National Park

Service has not received a response to these follow-up inquiries.

Regardless, the National Park Service has committed to consult with the U.S. Fish and Wildlife Service and NOAA-National Marine Fisheries Service on future actions implemented under the frame work described in this management plan to ensure that such actions are not likely to adversely affect threatened or endangered species.

SECTION 106 CONSULTATION WITH THE STATE HISTORIC PRESERVATION OFFICE

Prior to implementing an "undertaking," section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of the undertaking on historic properties and to afford the Advisory Council on Historic Preservation and the state historic preservation office a reasonable opportunity to comment on any undertaking that would potentially affect properties listed or eligible for listing in the national register. An undertaking is defined as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; and those requiring a federal permit, license or approval."

Consultation and scoping with the state historic preservation office, other agencies, tribes, and interested parties began in 2006 and is ongoing. The National Park Service sent a letter on February 7, 2006, to the state historic preservation office and the Advisory Council on Historic Preservation inviting their participation in the GMP planning process. In a letter dated May 29, 2008, the state historic preservation office and Advisory Council were given the opportunity to provide feedback in the development of preliminary alternatives. In addition, NPS representatives held a scoping meeting with interested historic preservation groups on April 18, 2006. NPS staff also traveled to Sacramento to meet with the state historic preservation office on March 16, 2010. Prior notification of the meeting was provided to the Advisory Council. Items on the meeting agenda included:

1. review of the proposed alternatives in the GMP/DEIS
2. discussion of the review and submittal process under section 106
3. discussion of the appropriate methodology for establishing the area of potential effects
4. discussion on the preparation of the finding of effect
5. preparation of a parkwide programmatic agreement

Documentation associated with NHPA section 106 compliance is being prepared by the National Park Service as a separate submittal, in coordination with the NEPA process. In a letter to the state historic preservation office dated November 20, 2012, the National Park Service sought concurrence on the extent of the area of potential effect and the identification of historic properties as required under 36 CFR 800.4. The state historic preservation office concurred with the National Park Service on these issues in a letter dated January 10, 2012. The National Park Service prepared a finding of effect on April 23, 2013. In consultation with the state historic preservation office, the agency also prepared a draft programmatic agreement on September 17, 2013, for review by interested parties. The National Park Service will continue to work with the state historic preservation office, Advisory Council, tribal representatives, and interested parties to complete this programmatic agreement for the treatment of historic resources, consistent with the proposed actions under the General Management Plan / Environmental Impact Statement.

NATIVE AMERICAN CONSULTATION

On April 26, 2006, meetings were held with Ohlone and Coast Miwok representatives to discuss issues, concerns, and opportunities related to the GMP planning process. Tribal consultation is ongoing and will continue as the National Park Service prepares the programmatic agreement.

COORDINATION WITH OTHER LOCAL, STATE, AND FEDERAL AGENCIES

During the preparation of the general management plan, NPS staff held a series of public agency roundtables with local, state, and federal agencies such as California State Parks, National Oceanic and Atmospheric Administration, Marin County, and local organizations such as the San Mateo County Historical Association. Three roundtables were held. First, general scoping of these agencies was conducted concerning the upcoming general management plan. Second, preliminary alternatives were presented and discussed. Finally, a review of the draft general management plan was presented and discussed with the various local agencies.

COMMENTS ON, CHANGES TO, AND RESPONSES TO COMMENTS ON THE DRAFT PLAN

INTRODUCTION

This section of the plan describes the comments that the National Park Service received on the Draft General Management Plan. It includes an overview of the range of comments received and summarized substantive comments with specific responses.

COMMENTERS ON THE DRAFT PLAN

In September 2011, Golden Gate National Recreation Area (the park) released the Draft General Management Plan Environmental Impact Statement for public review and comment. The GMP/EIS was available locally at the park and on the NPS planning website (http://parkplanning.nps. gov/goga). The public was invited to submit comments on the GMP/EIS through December 7, 2011.

During the public comment period, 542 pieces of correspondence were received. While private individuals submitted most of the correspondence, a variety of conservation organizations (such as the Marin Conservation League, Presidio Trust, and Marin Audubon Society); recreational groups (such as the Bay Area Sea Kayakers, San Francisco Dog Owners Group, and Crissy Field Dog Group); and government agencies also submitted correspondences.

Agencies

The following government agencies submitted comments on the draft plan. Copies of all letters received from agencies are in appendixes G and H.

California Coastal Commission
California Department of Transportation
California State Parks Office of Historic Preservation
Environmental Protection Agency
Federal Emergency Management Agency
Marin County Department of Public Works
National Oceanic and Atmospheric Administration, Gulf of the Farallones National Marine Sanctuary
National Oceanic and Atmospheric Administration, National Marine Fisheries Service
Presidio Trust
San Francisco Public Utilities Commission
San Francisco Municipal Transportation Agency
San Mateo County Department of Public Works
San Francisco Bay Conservation and Development Commission
U.S. Coast Guard
U.S. Fish and Wildlife Service

Organizations

The following organizations submitted comments on the draft plan.

Bay Area Sea Kayakers
California Watershed Posse
Crissy Field Dog Group
DogPAC of San Francisco
Environmental Action Committee of West Marin
Golden Gate Audubon Society
Golden Gate Raptor Observatory
Marin Audubon Society
Marin County Bicycle Coalition
PRBO Conservation Science

Responsible Organized Mountain Pedalers
San Francisco Bay Joint Venture
San Francisco Board Sailing Association
San Francisco Dog Owners Group
San Mateo County Historical Association
San Mateo County/Silicon Valley
Convention and Visitors Bureau
Wild Equity Institute

Individuals

There were 506 individuals that provided comments on the draft plan.

RANGE OF COMMENTS

Overall, there was considerable support for the plan and the alternatives analyzed. For example, several commenters expressed support for the park's ideas and methods for protecting wildlife and wildlife habitat, enhancing visitor experience, preserving historical features within the park, and maintaining and expanding recreational opportunities. In general, comments primarily expressing support or opposition to the Draft Plan/EIS are not included in this report because they were considered to be non-substantive comments; therefore, no response is warranted. However, because the National Park Service wanted to respond to as many comments as possible, many comments that express opposition to the Draft Plan/EIS or the alternatives analyzed are identified in this report. Park planners want to be comprehensive and transparent in their responses to comments, thus it was decided that some comments warranted responses, even though they may not technically fall under the definition of "substantive." Consequently, despite the comments in opposition to the Draft GMP/EIS in this section, the overall feedback on the Draft GMP/EIS was generally supportive.

The comment and response section is organized into fifteen response topics, starting with resource topics. Following these various topics are response topics that relate to specific chapters of the Draft Plan/EIS because some comments refer directly to a specific chapter or to sections within those chapters. Each response topic contains one or more concern statements related to that topic. The response topics are:

1. Recreation / Conservation
2. Birds at Alcatraz Island
3. Sensitive Resources Zone
4. Equestrian Facilities and Use
5. Maintenance and Design of Park Facilities
6. Transportation
7. Estimated Costs and Investments
8. Trails
9. Historic Resources for San Mateo County
10. Coordination with the Presidio Trust
11. San Francisco Peninsula Watershed Lands
12. Background
13. The Alternatives
14. The Affected Environment
15. Potential Environmental Consequences

The National Park Service has responded to all substantive comments raised by the public as part of finalizing the GMP/EIS. These responses are included below. Where appropriate, these responses also describe how the text in the final environmental impact statement was revised. In general, the planning team responded to comments by:

- modifying the alternatives as requested
- developing and evaluating suggested alternatives
- supplementing, improving, or modifying the analysis
- making factual corrections
- or explaining why the comments do not warrant further agency response, citing sources, authorities, or reasons that support the agency's position

RESPONSE TOPIC 1: RECREATION/CONSERVATION

Balancing Preservation and Recreation

CONCERN STATEMENT: Commenters stated that the National Park Service should include new text in the "Purpose and Need" section explaining that since 1980, the importance of GGNRA in protecting biodiversity has been studied and much better understood and that the GMP prioritizes protection of the park's natural resources and describes measures to manage demands on park lands that conflict with wildlife habitats.

CONCERN STATEMENT: Commenters stated that the primary purpose of GGNRA is to provide for public use and enjoyment. They did not agree with the purpose to "offer national park experiences" because of the urban nature of the park, and felt that the park was trying to use the Draft GMP to illegally change the enabling legislation, which they believed established GGNRA for recreation. They further stated that the plan violates previous agreements the National Park Service made with the City and County of San Francisco regarding lands transferred by the city to the National Park Service. As a result, some commenters felt that the Draft GMP should be considered unlawful. Commenters also stated that recreation should be the highest priority of GGNRA, suggesting that there should be more emphasis on increasing recreation within the Draft GMP and that GGNRA should not attempt to control or limit visitor access and recreational opportunities. Commenters also requested that the language "aggressively administer" and "controlled access" be removed from the GMP.

CONCERN STATEMENT: One commenter objected to a statement in the Draft GMP regarding management of natural resources within the natural zone, which read, "native wildlife communities and ecosystem processes would be preserved and restored to the greatest extent possible. Exotic invasive animals would be managed with the goal of eradication in the park." This commenter suggested that rather than restoring native biodiversity, a focus should be on minimizing the extinction of species that exist today—which may include species that "could be deemed exotic and invasive" because they are not native to the area, such as coyotes.

CONCERN STATEMENT: Some commenters stated that the Draft GMP puts too much emphasis on conservation and a backcountry experience that would have an adverse impact on visitors. Commenters stated that since most of GGNRA experiences visitation from the local population, requiring permits or having limits on visitation would have an adverse impact on visitor experience, which should be considered in the Draft GMP.

CONCERN STATEMENT: One commenter stated that recreation must be a priority for San Francisco, San Mateo, and Marin counties. The commenter also stated that recreation, the health and well-being of people, and the impact on local communities is not a stated goal of alternative 1.

RESPONSE

The fundamental purpose of the National Park Service, established by the NPS Organic Act of 1916, and reaffirmed by the NPS General Authorities Act, begins with a mandate to conserve park resources and values. The fundamental purpose also includes providing for the enjoyment of park resources and values by the people of the United States. Congress has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to prevail. NPS *Management Policies 2006* state that the National Park Service will focus special attention on visitor enjoyment while recognizing that the NPS mission is to conserve unimpaired each park's natural and cultural resources and values for the enjoyment, education, and inspiration of

present and future generations (section 1.4.3, NPS *Management Policies 2006*).

The Draft GMP "Foundation Statement" and "Park Purpose" sections summarize why Congress established GGNRA as a unit of the national park system. Establishment of GGNRA was a principal gesture in the "national parks to the people" initiative. The park's legislation does not place a priority on recreation over preservation. The purposes for which GGNRA was established are succinctly stated in the preamble to Public Law 92-589 (also included in the GMP appendix):

> In order to preserve for public use and enjoyment certain areas of Marin and San Francisco Counties (San Mateo County lands were added by PL 96-607) possessing outstanding natural, historic, scenic and recreational values, and in order to provide for the maintenance of needed recreational open space necessary to urban environment and planning, the Golden Gate National Recreation Area (hereinafter referred to as the "recreation area") is hereby established. In the management of the recreation area, the Secretary of the Interior (hereinafter referred to as the "Secretary") shall utilize the resources in a manner which will provide for recreation and educational opportunities consistent with sound principles of land use planning and management. In carrying out the provisions of this Act, the Secretary shall preserve the recreation area, as far as possible, in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area.

The 1975 consultation agreement between the City and County of San Francisco and National Park Service referenced by some commenters echoes this language as guidance for management of lands transferred by the city to GGNRA.

The preferred alternative proposes that GGNRA will remain a "park for the people" supporting diverse recreational activities. The purpose of GGNRA is not being altered in this plan.

The balance between preservation and recreation is a challenging task that GGNRA managers continuously address. The National Park Service worked to strike this balance in the Draft GMP by recommending a diversity of settings and opportunities, which are represented in the eight management zones, which define a range of desired conditions for natural and cultural resources and visitor experience throughout the different sections of the park. Both the zoning and supporting narrative descriptions of the preferred alternative continue to support most of the current activities that occur in the park today. In addition, the preferred alternative provides the addition of new opportunities and services, while preserving resources, which could enhance visitor experience in the future.

Various text changes have been made to the zoning tables to remove or clarify language that created concerns related to supporting recreation. Language has been added to clarify NPS legislated responsibilities, and the 1975 consultation agreement with the City and County of San Francisco has been added to the "Special Mandates" section of the GMP.

Importance of Education

CONCERN STATEMENT: One commenter felt that sensitive resources zones could be mapped and that education and outreach about these areas, including the use of new technologies, could be used instead of enforcement.

RESPONSE

The importance of education on sensitive resources is included throughout the document, particularly in the user capacity section, which outlines how visitor use will be managed to protect resources. Enforcement is also an important tool for managing park resources, particularly as it relates to highly sensitive and vulnerable assets. Both tools are important for NPS management to achieve desired conditions and fulfill policy requirements. To emphasize the important role of education in managing park resources, the following goal statement has been added to the natural resource goals for alternative 1 in the "Executive Summary" and "Concepts for Future Management" sections of the document: "increase visitor understanding, awareness, and support for park resources through education and interpretive opportunities that include messages on the sensitivity of park resources, park regulations, and appropriate visitor behaviors."

Regulation of Access

CONCERN STATEMENT One commenter expressed concern that regulating access to GGNRA would result in increased visitation to city parks, which may not have the funding to accommodate increased use, and is in opposition to the GGNRA enabling legislation.

CONCERN STATEMENT: One commenter stated that the Draft GMP does not address the impacts of restricting access/activities of current uses on the surrounding jurisdictions and the people that use these parks on a daily basis.

RESPONSE

Management tools to regulate access to park lands (e.g., permits, reservations) would be used sparingly, in sensitive resource areas, for high demand facilities such as campgrounds and/or at high use areas, such as Alcatraz and Muir Woods, and to manage special uses such as events. It is expected that these actions may disperse some use to other areas of the park and possibly to other times of the day or year, especially at peak times. It may also result in a small number of visitors seeking out other park locations such as state and local parks. Most current activities will continue as part of the preferred alternative, with the addition of new opportunities and services which may draw visitors from other park lands into the park.

Economic Value

CONCERN STATEMENT Commenters questioned where the analysis of social and economic values was included and also requested that this discussion be moved to the summary and introduction sections of the Draft GMP.

RESPONSE

The GMP includes analysis of the social and economic environment related to the park in the "Cumulative Impact Analysis" section of the document. The cumulative impact section for the social and economic environment has been moved forward in the document. A paragraph was added to the introduction section of the document that highlights the social and economic value of the park.

Visitor Surveys

CONCERN STATEMENT: Commenters suggested that GGNRA should conduct systematic and routine visitor surveys, including visitor counts, in order to ensure that the recreational value of GGNRA is not being impeded by NPS management decisions.

RESPONSE

Understanding who visits Golden Gate National Recreation Area and how they experience the park is vital to park

management decisions. Park staff and other social science researchers collect visitor use statistics on an ongoing basis and this data can be accessed by the public at: http: //www.nature.nps.gov/stats/. In addition, park staff have conducted and will continue to conduct routine visitor surveys throughout the park. Lastly, a commitment to continuing to monitor visitor use and related expectations and experiences is included in the user capacity section of the GMP.

Clarification of Recreational Uses, Including on New Lands

CONCERN STATEMENT: Commenters posed questions regarding the definition of types of activities that are explicitly allowed at GGNRA under the Draft GMP such as surfing, family events, running events, compatible recreation, and dog walking. Commenters stated that the Draft GMP needs to be revised to define the range of recreational activities on GGNRA lands, describe the environmental baseline with regard to recreation, and describe impacts on the recreation baseline of the proposed action alternatives.

CONCERN STATEMENT: One commenter suggested that guided tours should not be excluded from urban recreational areas.

CONCERN STATEMENT: One commenter provided several suggestions regarding specific improvements to the preferred alternative, such as additional environmental review of the preferred alternative be undertaken when specific projects are planned, and that the GMP should allow recreational uses to continue on newly acquired lands (except when regulated through site-specific public land planning processes and associated environmental review).

RESPONSE

The GMP uses the terms visitor experience and visitor opportunities to be inclusive of recreation opportunities and activities. Recreational opportunities vary widely, and not all permissible activities are explicitly listed in the GMP. The eight management zones describe the type of activities that could occur in each zone.

One of the key management goals of this GMP is to engage community members and visitors in the enjoyment, understanding, and stewardship of park resources and values. The first management concept "emphasizes the park's management commitment to the founding idea of 'parks to the people,' and the park's fundamental purpose of bringing national park experiences to a large and diverse urban population. Improving connections between the park and the people is fundamental to achieving the park's purpose and to maintaining the public's continued interest and support" (see "Concept 1: Connecting People with the Parks" in the "Concepts for Future Management" section of the GMP). The preferred alternative includes the goal of encouraging a wide range of recreational opportunities and experiences in a diversity of settings.

Concerning newly acquired lands, the goals of the preferred alternative for national park lands in San Mateo County (see the "Alternatives for Park Lands in Marin, San Francisco, and San Mateo Counties" section of the GMP) include focusing on the importance of providing access and engaging the community in the newest park lands, and "key improvements would include a sustainable system of trails that will connect with local communities and contribute to an exceptional regional trail network." In addition, the need for more directional signs and trailhead parking throughout these areas was also emphasized. These goals would allow consideration of many of the specific ideas provided by commenters. Some trail and trailhead improvements are noted for specific areas, however, detailing specific trails and related trailhead parking improvements in all areas of the park is outside the scope of this plan and would be

addressed in more detailed implementation plans with associated environmental review as the commenters suggested (also see response topics 6 "Transportation" and 8 "Trails").

As part of National Environmental Policy Act (NEPA) compliance, environmental baselines have been conducted for this plan. An environmental baseline specific to recreation is included under the category of "Visitor Use and Experience." Existing uses on newly acquired lands will be evaluated for consistency with NPS regulations and policies. If uses are not consistent, they may necessarily be restricted. Other existing uses will be guided by subsequent planning efforts.

To address specific comments regarding clarification to the zone descriptions, the reference to "informal beach sports" has been changed to "informal sports," and "such as guided activities" has been removed from the references for commercial services in the natural zone description.

Recreation in Management Zones

CONCERN STATEMENT: One commenter expressed a concern that the Draft GMP only identifies recreation within the diverse opportunities zone, and that popular recreation activities would be prohibited in the natural zones. One commenter objected to the designation of active recreation areas as diverse opportunities zones, and noted that the terminology suggests that visitors may find these zones more attractive.

CONCERN STATEMENT: One commenter stated that many natural zones are adjacent to urban areas, and should be removed from natural zone designation.

CONCERN STATEMENT:: Commenters suggested that the zone management definitions do not reflect the enabling legislation, which addresses urban recreation, and provided language to describe the natural and other management zones.

CONCERN STATEMENT: One commenter suggested that Ocean Beach should be zoned as a diverse recreational zone.

CONCERN STATEMENT: Commenters stated that GGNRA is within an urban setting with no backcountry wilderness, and as such should not be managed as a backcountry area, and that the only "controlled access" that should occur is through barriers and signs, not permitting. One commenter stated that these areas currently receive thousands of visitors every day, yet the Draft General Management Plan / Environmental Impact Statement (Draft GMP/EIS) proposes to manage two-thirds of Ocean Beach and most of Fort Funston as low-use natural zones and suggested that the GMP should acknowledge that Ocean Beach and Fort Funston are high-use areas and should be managed that way.

CONCERN STATEMENT: Commenters suggested that future implementation actions preserve the natural, wild environment visitor experience and that maintaining the Marin Headlands as a natural landscape should have priority over providing services or visitor access typical in local county parks.

CONCERN STATEMENT: Commenters suggested that recreational opportunities, and higher levels of visitor use, should be expanded, not reduced for Ocean Beach and Fort Funston. Commenters also stated that providing a backcountry experience in San Francisco is not feasible given the urban surroundings of GGNRA.

RESPONSE

The management zones in the GMP aspire to provide overall direction on the desired conditions for different areas within the park. The management zones provide a starting point from which further management decisions can be made. These zones will guide management decisions that are consistent with park purpose and significance

and related NPS management policies. The diversity of natural settings and the corresponding recreational opportunities that exist within Golden Gate NRA result in the need for a wide range of management strategies. The eight management zones define a range of desired conditions for natural and cultural resources and visitor experience opportunities throughout the different sections of the park. Both the zoning and supporting direction provided within the preferred alternative, continue to support most of the current activities that occur in the park today. In addition, the preferred alternative provides the addition of new opportunities and services that will enhance existing visitor experience.

The management zones describe the type of activities that could typically occur in each of the zones, and include a variety of recreational opportunities ranging from walking to participating in informal sports to bird and wildlife viewing to camping. The list of activities in the GMP is not exhaustive. Additional opportunities not listed could take place if they are consistent with the desired conditions described for the zone. As with any activity, an analysis would be conducted to determine if a new use is appropriate for the zone. To respond to a specific comment regarding management of special events, the reference to "family events," has been removed in the zone descriptions. The intent of this description is to recognize that larger, organized special events will be managed according to policies and operational guidance established by the National Park Service, which would not typically include family gatherings.

The natural zone offers a large area where dynamic characteristics of ecological processes can be observed and enjoyed. Natural zones are not pristine wilderness-like areas and recreational activities consistent with the desired conditions in the zone may occur here. To avoid confusion regarding the intent of this zone, the term "backcountry" has been removed from the description. Despite neighboring urban areas, experiences of nature and solitude are available in this zone. This zone will be managed to preserve the resources and their associated values.

Specific concerns about zoning for Fort Funston and Ocean Beach were expressed by commenters. In the preferred alternative, the diverse opportunities and natural zones for both Ocean Beach and Fort Funston would allow for the range of current recreational activities as well as enhance visitor opportunities through landscape and trail improvements and other visitor amenities (e.g., restrooms, group picnicking).

Concerning Fort Funston, management zoning includes resource protection. The majority of Marin Headlands and a portion of Fort Funston are zoned with the natural zone to ensure protection of park resources, including native habitat. Other zones in these areas also provide resource protection, particularly for sensitive species and habitat. In addition to the zone description, the description of the alternatives for these areas identifies the need to restore and maintain native habitat, particularly to protect shorebirds, coastal bluffs, and bank swallows and to allow natural coastal and marine processes to occur. If needed, some areas could be closed for the purpose of resource protection. This zone recognizes the need to manage for high-use areas along with experiences of solitude and nature. The natural zone has been applied to this area because it accommodates the majority of existing use.

Concerning Ocean Beach, the context of management has changed in recent history as federally listed endangered and threatened species have been identified in this area. Requirements for how this area is managed are therefore different than when the land was transferred to GGNRA. A master plan for Ocean Beach itself will guide specific implementation of future facilities and uses and ensure that a balance between protection of natural resources and visitor use opportunities is found.

NEPA Analysis and Dog Management

CONCERN STATEMENT: One commenter expressed the viewpoint that the Draft GMP does not comply with NEPA for several reasons, including the need for an analysis of recreation as well as a failure to analyze the impacts to the human environment from limiting access. Further, they objected that the Draft GMP pre-determines the outcome of other ongoing planning documents (the dog management plan) and incorrectly excuses the park from further NEPA analysis on future projects. Another commenter stated that a separate land protection plan should be prepared in advance of zoning newly acquired lands.

RESPONSE

The National Park Service received many public comments on the Draft GMP addressing dog walking within GGNRA. Due to the controversy and litigation surrounding dog walking, and the site-specific analysis needed to adequately describe the implementation of a dog walking plan at 22 distinct areas, GGNRA initiated a planning effort focusing solely on dog management, separate from the GMP. The GMP's proposed zoning is broadly consistent with the dog management plan. However, the GMP and dog management plan are separate and distinct planning efforts; if real or perceived inconsistencies are found, the final dog management plan would take precedence over the GMP for this particular use.

During the GMP process, the National Park Service studied all lands within the planning area, including ones not currently under federal ownership. The final GMP describes the proposed zoning for those areas should they be acquired by the park. The zones established through the GMP for newly acquired lands or areas planned for future park addition allow for a wide range of recreational opportunities for visitors. Acquisition priorities are made through a land protection plan, which is updated following any legislated boundary adjustments.

The GMP uses the terms "visitor experience" and "visitor opportunities" to be inclusive of recreation opportunities and activities. Recreational opportunities vary widely, and not all permissible activities are explicitly listed in the GMP. The eight management zones describe the type of activities that could occur in each of the zones. The preferred alternative includes the goal of encouraging a wide range of recreational opportunities and experiences in a diversity of settings.

As part of NEPA compliance for this plan, environmental review and analyses have been conducted for all lands within the GMP planning area, including lands the park anticipates being added to the boundary, such as Point San Pedro. Environmental review specific to recreation on park lands is included in the section "Visitor Use and Experience." Management zones have been developed following that review and are consistent with NPS regulations and policies. Existing uses on lands not covered by the GMP will be guided by subsequent planning efforts. (Also see the response for "Clarification of New Uses, Including on New Lands.")

RESPONSE TOPIC 2: BIRDS AT ALCATRAZ ISLAND

Birds at Alcatraz Island

CONCERN STATEMENT: Commenters questioned the analysis of impacts to birds on Alcatraz Island, stating that night herons would be disturbed if the ruins were removed. Other concerns for bird species on Alcatraz included providing more protection for the Western gull and carefully considering the impacts of increased visitation on seabirds.

CONCERN STATEMENT: One commenter stated that the proposed restoration and management of buildings and landscapes in the historic immersion zone (main prison area on Alcatraz Island) and increased access for visitors would negatively impact the habitat of multiple bird populations and colonies.

CONCERN STATEMENT: One commenter stated that on Alcatraz Island, within the park operations zone, the proposed rehabilitation and stabilization activities for the Quartermaster Warehouse and power plant would probably have a negative impact on adjacent Western gull colonies as well as Pigeon Guillemot nesting habitat, and that visitor access to the power plant should be limited to the months outside of the breeding season.

CONCERN STATEMENT: One commenter suggested that providing overnight accommodations should avoid disruption of seabird nesting and roosting areas through human activity, night-lighting, and noise, and the potential for visitors to access unauthorized areas.

CONCERN STATEMENT: One commenter questioned whether increased visitation is expected for Alcatraz Island under the Draft GMP, while another commenter had concerns that increased visitation would negatively impact seabirds.

CONCERN STATEMENT: Commenters suggested that maintenance and construction on Alcatraz should be scheduled to avoid disturbance to birds during nesting season February 1 through July 8.

CONCERN STATEMENT: One commenter suggested additional management actions to reduce impacts to colonial nest sites on Alcatraz Island, including having maintenance and construction personnel work with biologists to limit disturbance.

CONCERN STATEMENT: Commenters raised concerns with the level of detail and accuracy of the analysis of special status bird species on Alcatraz Island. Specific concerns included the long-term adverse impacts to nesting and roosting bird colonies, the negative impacts of increased visitor use, and the negative impacts of introducing food/kitchen services, as well as overnight accommodations.

CONCERN STATEMENT: One commenter questioned the impact analysis for vegetation and wildlife habitat at Alcatraz and Muir Woods, stating that the impacts of alternative 3 would be major and adverse for natural resources, rather than minor and beneficial.

RESPONSE

Impact Analysis in Final General Management Plan / Environmental Impact Statement:
Given the broad scope and large geographic scale of a general management plan, the National Park Service considers the level of habitat impact analysis in the final general management plan / environmental impact statement (FGMP/EIS) appropriate. This GMP is a long-range, parkwide document. When specific actions identified in the GMP are implemented throughout the park, the National Park Service will conduct further environmental analysis and regulatory compliance at a much more site-specific, detailed level. This is when the level of analysis noted in some public comments will be addressed. The GMP includes an "Implementation Planning and Mitigation Measures" section that outlines this commitment.

Also, the "Potential Environmental Consequences" section for alternative 3 effects on "Habitat (Vegetation and Wildlife)" has been modified in various areas of the FGMP/EIS to clarify the anticipated impacts to waterbird habitat on Alcatraz Island. Most notably, the edited language draws distinctions between the effects on Western gulls and the effects on other

waterbird species on Alcatraz Island. Due to the proposed cleaning and/or removal of the ruins near the parade ground under the NPS preferred alternative (in the historic immersion zone), the impact to the Western gull species would be long-term, major, adverse, and localized. The parade ground is the only area within the historic immersion zone that would have notable natural resource impacts. Also, as clarified in the conclusion of the impact analysis for alternative 3 (in the "Habitat (Vegetation and Wildlife)" subsection), the National Park Service would ensure that impacts to other waterbird species on Alcatraz Island would not exceed a long-term, moderate, adverse, and localized effect due to the implementation of available adaptive management measures to protect bird habitat.

Lastly, for clarification, there are no known state- or federal-listed threatened or endangered bird species on Alcatraz Island. This has also been noted in impact analysis of biological resources for alternative 3, the NPS preferred alternative for Alcatraz Island (see "Potential Environmental Consequences" section).

Mitigating Visitation Impacts to Waterbird Habitat:
The robust nature of the bird colonies on Alcatraz Island has sustained the colonies through many changes in uses and activities on the island since the decommissioning of the prison in the 1960s. Through the use of careful biological monitoring and adaptive management measures, NPS staff is confident that healthy bird colonies can be sustained on the island into the future under the guidance of the NPS preferred alternative for this GMP (alternative 3).

More specifically, although the spatial area of possible visitor access on Alcatraz would increase under the GMP, the volume of visitation on the island would be monitored and managed closely by the National Park Service. The GMP includes a comprehensive user capacity strategy to manage and/or address visitation volume issues (see the "User Capacity" section). This strategy sets forth the process that the National Park Service will apply to monitor visitation via the use of indicators and standards. For example, one indicator that monitors visitation effects on waterbirds is "the number of incidents of visitor disturbance to Brandt's cormorants that result in impacts to individual birds during nesting season." In this case, the Brandt's cormorant would be used as an indicator species/resource that would help the National Park Service monitor overall impact to all waterbird species. When conditions of the particular resource indicators exceed the set standards, the National Park Service would apply the appropriate adaptive management and mitigation measures to protect the resources. For more detail and explanation, please refer to the "User Capacity" section of the document.

Some concerns were raised about the possible increases in visitation in the park operations zone. As noted in the description of the park operations zone, visitor access to this zone would be extremely limited. Also noted in the alternative 3 description for Alcatraz Island, access to the yard (including the proposed rehabilitation and stabilization work on the Quartermaster Warehouse and power plant) "would employ measures to protect nearby seabird habitat."

In addition, the overnight accommodations on Alcatraz would be for participants in education, conservation, and stewardship programs, and would be managed and supervised to deter participants from disturbing waterbirds and bird habitat on the island.

Lastly, an NPS staff biologist monitors all park activities and visitation on Alcatraz Island on a daily basis and assesses possible impacts to bird habitat. The island biologist is consulted regularly for input on ways to avoid and/or mitigate visitation impacts to birds and waterbird habitat on the island.

Mitigating Maintenance and Construction Impacts to Waterbird Habitat:
Future NPS actions and implementation plans associated with this GMP will incorporate a variety of impact mitigation measures to minimize or avoid impacts to bird habitat from maintenance and construction-related activities. This commitment is consistent with efforts associated with past and ongoing maintenance and construction projects. For example, the 10 projects encompassed by the *Alcatraz Island Historic Preservation and Safety Construction Program Final Environmental Impact Statement* (AIHPSCP) adhere to the restrictions and mitigation guidelines noted in that document. Guidance in the AIHPSCP include mitigation measures that limit the timing, duration, and type of disturbances associated with park operation activities, such as avoiding activities during waterbird breeding season on the island. Implementation plans and activities associated with this GMP will incorporate similar mitigation measures, as appropriate.

In addition, an NPS staff biologist monitors all park maintenance and construction activities on Alcatraz Island on a daily basis and assesses possible impacts to bird habitat. The island biologist is consulted regularly for input on ways to avoid and/or mitigate maintenance and construction impacts to birds and bird habitat on the island.

RESPONSE TOPIC 3: SENSITIVE RESOURCES ZONE

Kayak Recreational Use

CONCERN STATEMENT: One commenter made several suggestions regarding recreational opportunities at GGNRA, such as keeping coastal access open to small, nonmotorized water craft.

CONCERN STATEMENT: Commenters suggested that kayakers and other nonmotorized vessels should be granted access inside the proposed sensitive resources zone in Marin County (especially at Point Bonita Cove and Bird Rock), citing visitor experience and safety concerns.

CONCERN STATEMENT: Commenters objected to the designation of the nearshore areas at Point Bonita Cove and Bird Rock as sensitive resources zones, stating that these areas are needed for the kayaking community, and for the safety of the kayakers in the area. Commenters suggested that more specific information should be provided regarding the management zones at Bird Rock and Bonita Cove including access and restrictions. Other commenters suggested that more emphasis should be given to educating kayakers and boaters on the potential to disturb marine birds, and that there should be more signs informing people of the ecological values at the Marin County sites.

RESPONSE

The sensitive resources zone around Bonita Cove and Bird Island has been changed in the preferred alternative to extend 300 feet out from the shoreline, rather than to the park boundary at 0.25 mile. The natural zone would replace the sensitive resources zone for the remaining nearshore area within the park boundary, and kayaking is permitted within this zone. The sensitive resources zone description related to visitor experience has been clarified and further limits visitor activities that would be allowed within this zone, to better meet the intention of this zoning designation. In general, boating and visitor access would be restricted or prohibited, particularly during the most sensitive times of the year. This is necessary because nonmotorized boating can disturb marine mammals on beaches and both roosting or nesting birds as well as marine mammals on nearshore rocks. Zoning restrictions would not apply during actual emergency situations. (Also see the discussion of the sensitive resources zone under Response Topic 15.)

RESPONSE TOPIC 4: EQUESTRIAN FACILITIES AND USE

Equestrian Uses

CONCERN STATEMENT: Commenters suggested that less emphasis should be placed on equestrian facilities and uses and that horses should not be allowed on unpaved trails.

RESPONSE

The National Park Service recognizes that horseback riding is a traditional and popular means of recreation and that it expands the variety of visitor experiences available in GGNRA. The equestrian-related improvements proposed in the GMP preferred alternative are intended to address important resource management goals and balance this activity among other kinds of recreational activities, including hiking and bicycling.

GGNRA acknowledges that soil erosion on trails is an important aspect of resource management and planning for equestrian uses and facilities would use best management practices such as wet weather closures or other use restrictions for trails on erosive or unstable soils where appropriate.

CONCERN STATEMENT: One commenter stated they would prefer to see bridge crossings for horses over Redwood Creek to avoid bank erosion and impacts to aquatic species.

RESPONSE

The proposed creek crossings are in Mount Tamalpais State Park, and not within NPS jurisdiction or the scope of the GMP; however, in the overview of the Muir Woods preferred alternative the GMP expresses the NPS intention to cooperate with other agencies on restoration, stewardship, and recreation in the Redwood Creek watershed. The comment has been shared with California state parks personnel in the interest of advancing protection of creek resources and providing safe and sustainable trail connections in the watershed.

CONCERN STATEMENT: Commenters suggested that it is important to maintain the Rodeo Valley stable in the Marin Headlands for recreational and historical preservation reasons.

RESPONSE

The GMP preferred alternative proposes to retain equestrian uses at the Rodeo Valley stable, in the description of Fort Barry and Fort Cronkhite. The *Marin Equestrian Stables Plan and Environmental Assessment* provides additional detail and will guide future decisions for equestrian operations at the Rodeo Valley stable.

CONCERN STATEMENT: Commenters stated support for retaining the park horse patrol at its current location at lower Tennessee Valley and felt that the facility has historic significance to the area. One commenter noted that the format of the Draft GMP made it difficult for the reader to easily understand how the alternatives affect the lower Tennessee Valley and park horse patrol.

RESPONSE

The park horse patrol, and all other programs, facilities, and structures at lower Tennessee Valley are not historic and would be removed to enable restoration of native wetland and riparian habitats, which would greatly enhance ecological values and is a high priority for the National Park Service in this area. The *Marin Equestrian Stables Plan and Environmental Assessment* will be used to determine the new location for the park horse patrol. Text has been clarified to better describe this change in table 17 “Comparison of Alternatives for Park Lands in Marin County” and in the alternative 1 narrative description.

RESPONSE TOPIC 5: MAINTENANCE AND DESIGN OF PARK FACILITIES

Maintaining and Repairing Facilities

CONCERN STATEMENT: Commenters stated that a top priority for GGNRA should be to repair and maintain neglected facilities. Others stated that GGNRA should remove existing visitor facilities and discontinue recreational uses where continued use is unsafe, infeasible, or undesirable due to changing environmental conditions.

CONCERN STATEMENT: One commenter stated that high visitation areas such as Fort Funston and Ocean Beach have almost no facilities (such as bathrooms and water fountains), and Stinson Beach facilities are in need of urgent repair. Additionally, paved walking paths are crumbling and eroding at Fort Funston and at parking areas along the Great Highway at Ocean Beach.

CONCERN STATEMENT: Commenters suggested priority funding for paving and/or restoring the walking paths at Fort Funston, specifically the Sunset Trail, which provides access for the disabled.

RESPONSE

Maintenance is an ongoing need for park facilities. The GMP includes information regarding large scale facility rehabilitation and historic preservation projects, but does not include details about year-to-year maintenance priorities. Projected schedules for maintaining facilities are addressed in the park asset management plan (PAMP), which uses a number of National Park Service-wide criteria to identify maintenance priorities.

The park contains a large number of facilities, not all of which support the park's mission. The National Park Service examined those facilities, and considered them for removal. The goals and strategies may be found in the GMP section titled "Facilities Not Directly Related to the Park Mission."

The preferred alternative includes very few new facilities. The vast majority of recommendations are for historic preservation and facility rehabilitation. The cost estimates for new facilities are far outweighed by estimates for historic preservation and facility rehabilitation.

One of the goals of alternative 1 is to enhance access to and within park lands and make them welcoming places to visit, which is consistent with providing visitor amenities. At Ocean Beach and Fort Funston, the preferred alternative calls for improved visitor amenities, including parking, restrooms, trails, and other items. Trail improvements at Fort Funston are part of the preferred alternative and could include the Sunset Trail.

The preferred alternative recommends replacement of Stinson Beach facilities with sustainable new facilities that would replace deteriorated restrooms, showers, picnic areas, and parking lots. Descriptions may be found in the alternatives section of the GMP. NPS *Management Policies 2006* guides where and if facilities would be rebuilt if destroyed due to natural hazards, and the policy states that new or rebuilt facilities should not be located in areas where they would be damaged or destroyed by natural physical processes. This is also addressed broadly in the climate change section of the GMP in the "Elements Common to All Action Alternatives" section.

Facility Design

CONCERN STATEMENT: Commenters suggested that new building construction should follow the profile of the landscape.

RESPONSE

NPS *Management Policies 2006* on park facilities and design principles would guide building design. Management policies require that designs for facilities are "harmonious with and integrated into the environment."

RESPONSE TOPIC 6: TRANSPORTATION

Improvements to Transportation Network

CONCERN STATEMENT: Commenters made suggestions on how GGNRA could improve the transportation network throughout GGNRA, such as: maintaining better wayfinding signage along the roads in order to direct visitors to the park and parking areas, using electric buses, connecting the Dias Ridge Trail to the Redwood Creek along State Route 1 in the vicinity of Muir Beach, improving traffic and pedestrian crossings along State Route 1, and bike racks and other upgrades to make parking areas state-of-the-art.

CONCERN STATEMENT: The California Department of Transportation suggested developing a long range transportation plan for GGNRA to determine sustainable and multimodal access to GGNRA sites that would improve transit opportunities. They encouraged interagency coordination for appropriate decision making regarding encouraging abandonment of State Route 1 in the event of a catastrophic landslide as included in alternative 2. They also suggested collaboration in drafting the long term transportation plan and reducing overall vehicle miles traveled to access GGNRA through the implementation of non-single occupancy vehicle modes of transport.

RESPONSE

The transportation section under "Elements Common to All Action Alternatives" includes management strategies that would reduce overall vehicle miles traveled. The preferred alternative also includes concepts that apply to specific park sites, such as Muir Woods. Other specific improvements to facilities to improve nonmotorized access, such as bike racks, typically are not addressed in a GMP, which is a programmatic, conceptual planning document, but will be in follow-on plan implementation actions.

GGNRA is currently preparing the park's first long range transportation plan. The plan will provide a vision and planning approach to improving multimodal access to park sites. It will be consistent with current guidelines on the development of transportation plans prepared by the California Department of Transportation (Caltrans), and the metropolitan planning organizations, and will include the involvement of Caltrans and other agencies as suggested in the comment. The plan is scheduled for completion in 2013 following completion of a public outreach process and a draft plan.

Alternative 2 is not the GMP preferred alternative. The provision in alternative 2 that suggested encouraging abandoning State Route 1 in the event of a catastrophic landslide was considered, but was not selected.

Bicycle and Multimodal Access in Marin County

CONCERN STATEMENT: One commenter suggested several ways in which bicycle and multimodal access to sites within Marin County could be improved. Suggestions included separating bicycle and vehicular traffic on Conzelman, Bunker, and McCullough roads; repairing and reopening damaged road segments (with consideration to all user types); providing bicycle parking / racks; improving bicycle access and infrastructure to the Homestead Hill area; and coordinating with the California Department of Transportation to ensure the provision of safe and sustainable multimodal transportation facilities along State Route 1 and the Panoramic Highway.

RESPONSE

GGNRA is actively working to improve multimodal access, including bicycle access, to park sites. A more comprehensive

transportation planning effort to identify this access is being considered in the long-range transportation plan. Partners and stakeholders such as Caltrans will be invited to participate in this planning effort.

Improvements to Bunker, Conzelman, and McCullough roads were determined through the *Marin Headlands Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement* (2009), which included some separation of bicycle and vehicle traffic, as well as some widening of roads.

GGNRA is committed to improving nonmotorized access as an important part of reducing vehicle trips and congestion while minimizing impacts to park resources. However, the park is also committed to balancing the need for access with the protection of park resources, which can be impacted by the construction of new facilities and/or widening existing facilities. Improvements to specific facilities for nonmotorized access, such as bike racks, typically are not addressed in a general management plan; however, they are consistent with concepts in the preferred alternative, and with the management strategies in the GMP transportation section, which are common to all alternatives, that include multimodal improvements to several park areas. More detailed implementation planning following the GMP would address these concepts in more depth. Language has been added to the GMP that clarifies the NPS intention to improve nonmotorized access and describes additional management strategies that the National Park Service may consider.

Congestion Management Tools

CONCERN STATEMENT: Marin County Department of Public Works suggested defining the "congestion management tools" and efforts that would be used to manage parking and reduce traffic in Stinson Beach to achieve the beneficial impact conclusion for visitor access stated in the Draft GMP/EIS.

RESPONSE

Examples of some of the broad range of tools to reduce congestion and manage transportation demand are identified in "Elements Common to All Action Alternatives" in the "Transportation" section, under the heading "Management Strategies," bullet item "Employ Tools for Congestion Management." These include pursuing online trip planning/wayfinding and employing intelligent transportation systems technologies. Other congestion management tools are identified. Please refer to this section for further details.

State Route 1 and the Panoramic Highway Area Improvements

CONCERN STATEMENT: One commenter suggested that the Draft GMP should specify where and how State Route 1 and the Panoramic Highway (in alternatives 1 and 2) would be improved, and how the improvements would retain scenic rural character. The commenter suggested bicycle access / infrastructure improvements in the vicinity of Homestead Hill, including bicycle parking.

RESPONSE

State Route 1 is a state highway managed by Caltrans; Panoramic Highway is a county road managed by Marin County. This section of the plan refers to park lands adjacent to these roads where they pass through the park.

Protection of scenic resources is a high priority for GGNRA. The GMP does not specify site-specific improvements to State Route 1 and the Panoramic Highway; but future improvements to these roads may be envisioned by Caltrans and Marin County or proposed by GGNRA in order to improve nonmotorized access and safety and to protect the highways from slides or other

environmental factors. The park is committed to coordinating with Caltrans and Marin County to balance these needs with the protection of resources, including scenic resources, which can be impacted by construction of new facilities and/or by widening existing roads. The park would coordinate with Caltrans and Marin County to encourage that future modifications are sensitively designed to preserve park resources including the scenic, rural character of these highways and adjacent areas, and to encourage improvements for visitor safety including safe crossings. The GMP identifies more specific improvements for some park lands adjacent to State Route 1 and Panoramic Highway, such as White Gate Ranch and Homestead Hill; other improvements have not been identified and are beyond the scope of the GMP.

Language has been added to the GMP clarifying that these roads are not managed by the National Park Service and better describing proposed improvements in the Homestead Hill area.

Transportation Opportunities at Fort Mason

CONCERN STATEMENT: One commenter suggested that light rail and rapid bus transit could be used to provide access to Fort Mason.

RESPONSE

Improved public transit access to park lands, including Fort Mason, is an important goal for GGNRA. The park is coordinating with San Francisco Municipal Transportation Agency (SFMTA) on the two projects mentioned. In addition to the SFMTA extension of the F-Line Streetcar to Lower Fort Mason, and development of the bus rapid transit on Van Ness Avenue, the preferred alternative also anticipates improved access to Fort Mason through the potential development of a water shuttle at Lower Fort Mason and improved walking paths.

Partnerships to Improve Access to Phleger Estate

CONCERN STATEMENT: San Mateo County Department of Public Works stated an interest in working with GGNRA to fund and perform improvements to Richards Road, which provides trail and management vehicle access to the Phleger Estate and Huddart County Park.

RESPONSE

Richards Road links to the Miramontes Trail at the east end of the Phleger Estate and the Lonely Trail in the southwest corner of the property. The GMP alternative description for Phleger Estate includes collaboration with San Mateo County to improve trail connections; GGNRA is interested in working with the San Mateo County Department of Public Works to identify strategies to facilitate the desired improvements.

Transportation on Sweeney Ridge

CONCERN STATEMENT: Commenters suggested restricting cars on Sweeney Ridge and providing more parking at Milagra Ridge.

RESPONSE

Currently, visitors can access Sweeney Ridge via three primary trailheads: Skyline College (hiking only), Shelldance Nursery (hiking, bicycling, and equestrian) and Sneath Lane (hiking and bicycling). Additional access to Sweeney Ridge is permitted through adjacent lands, specifically from Fassler Avenue through Cattle Hill and from the Portola Gate through the Peninsula watershed (requires permission and gate access). No vehicles are permitted on Sweeney Ridge, with the exception of NPS personnel and authorization from the National Park Service for

specific uses to accommodate visitors with disabilities and limited special events. Under the preferred alternative vehicular access to Sweeney Ridge would remain very limited. This text has been clarified in the GMP.

The GMP identifies trailhead parking as a potential improvement at Milagra Ridge.

Transportation Improvements at the Montara Lighthouse

CONCERN STATEMENT: San Mateo County Department of Public Works stated that California Coastal Trail improvements and a safe crossing of State Route 1 should be anticipated at the Montara Lighthouse location.

RESPONSE

The GMP concept overview for park lands in San Mateo County includes collaboration with the community and Caltrans to provide safe access to park sites along State Route 1. The GMP concept for Montara Lighthouse also includes access improvements and improved trail connections. The National Park Service has been participating as a stakeholder in San Mateo County's *Midcoast Highway 1 Safety and Mobility Study* ("*Traffic and Trails*"). GGNRA is familiar with the recommendations currently proposed for State Route 1, including improved crossings, and will continue to collaborate with other agencies to facilitate implementation of these improvements and to encourage the county to continue to evaluate the study's recommendations and prioritize safety throughout the corridor.

TRANSPORTATION FOR MARIN COUNTY, INCLUDING MUIR WOODS

CONCERN STATEMENT: Commenters made specific suggestions for studying and improving transportation and access to park sites in Marin County, including Muir Woods National Monument and Stinson Beach. Suggestions for Muir Woods included realigning Muir Woods Road, providing consistent, year-round shuttle service, installing a changeable message sign on Shoreline Highway, exploring possible areas for parking and using the shuttle between the entrance of Muir Woods National Monument and the Manzanita Park and Ride area, defining how intelligent transportation systems would be employed, installing additional road signage, and completing parking and traffic studies for the proposed welcome center. Suggestions for Stinson Beach included reducing the south parking lot to create wetlands, converting the south picnic area to parking, adding changeable message signs at U.S. Highway 101 to provide messages related to Stinson Beach parking and traffic conditions, and partnering with local transportation agencies to improve transit to Stinson Beach. Other suggestions for transportation in Marin County included improving pedestrian safety, including trailer parking for the Frank's Valley Horse Camp, promoting the use of the Marin Stagecoach, using speed bumps to control traffic speed, conducting a study on visitor access in Tennessee Valley, and working with Caltrans and other organizations to conduct transportation studies to improve congestion.

RESPONSE

Many suggestions for Muir Woods are consistent with the GMP preferred alternative, but are beyond the scope of the GMP. More detailed analysis and environmental review following the GMP will address approaches to reduce congestion and improve access to and in the entry area of Muir Woods. Consistent with the GMP, goals of more detailed planning for Muir Woods will include reducing vehicle trips, improving visitor access, and protecting park resources. More detailed planning will also address improving access for transit and tour operators, capital improvements needed to facilitate these improvements, implementation of intelligent transportation systems, and

transportation demand management strategies.

GGNRA is currently preparing the park's first long-range transportation plan. The plan will provide a vision and planning approach to improve multimodal access to park sites, including those in Marin County. It will be consistent with current guidelines on the development of transportation plans prepared by the California Department of Transportation (Caltrans) and metropolitan planning organizations. The plan is scheduled for completion in 2013 following completion of a public outreach process and a draft plan.

Increasing transit access to Stinson Beach is included in the preferred alternative concept for Stinson Beach. Converting the south parking area to wetland was considered in alternative 2, but this alternative was not identified as the NPS preferred alternative. Other specific strategies for improving transportation at individual sites—such as the commenters' suggestions for Stinson Beach—are beyond the scope of the GMP and would be addressed in following implementation planning.

Proposals for Marin County Maintained Roads

CONCERN STATEMENT: Marin County Department of Public Works stated that any change to the configuration of Muir Woods Road or any other county-maintained roads should be reviewed and approved by the Marin County Department of Public Works staff.

RESPONSE

All proposed changes to non–NPS-managed roads would be pursued in coordination with the appropriate managing agency, including Marin County.

RESPONSE TOPIC 7: ESTIMATED COSTS AND INVESTMENTS

Funding for San Mateo Priority Needs

CONCERN STATEMENT: Commenters, including the County of San Mateo Department of Public Works, questioned the $3 million of priority funds to be set aside for the equestrian center at Rancho Corral de Tierra, suggesting that it seems narrow in focus. Commenters questioned why so little capital was set aside for park lands in San Mateo ($4.6 million of priority funds according to the Draft GMP cost estimates), and why $3 million of that $4.6 million was set aside for the proposed equestrian center at Rancho Corral de Tierra. Commenters suggested that other locations and needs were more significant and pressing (Phleger Estate, other possibilities in Pacifica, and improving connections between parklands in San Mateo County).

RESPONSE

The park lands in San Mateo County make up a large percentage of park acreage, therefore, it is understandable to ask why the portion of estimated capital costs for this area is relatively small. The primary reason is that the highest costs identified in the GMP are for managing major constructed assets, and there are fewer of these in San Mateo County.

It is important to note that the GMP identifies several critical natural resource restoration projects in San Mateo County in addition to the major capital projects focused on constructed assets at Shelldance Nursery, Rancho Corral de Tierra, and the Phleger Estate. Furthermore, the GMP identifies a $4 million increase in annual operating costs, much of which would be spent on park operations in San Mateo County.

Cost Estimates for Tennessee Valley

CONCERN STATEMENT: One commenter expressed concern that the cost estimates at Tennessee Valley do not account for the removal of structures and are therefore not accurate.

RESPONSE

The cost estimates for removal of facilities in lower Tennessee Valley were grouped with costs for natural resource restoration for Marin County park lands. Table 12 has been changed to clarify that the estimated costs of facility removal at Tennessee Valley were included in the natural resource restoration costs and a row was added to the cost estimate tables for alternatives 1 and 2 in facility removal to include costs of removal of roads and nonhistoric structures at lower Tennessee Valley.

RESPONSE TOPIC 8: TRAILS

Interpretive Trails in Muir Woods National Monument

CONCERN STATEMENT: One commenter y questioned the level of trail development and type of interpretation proposed for Muir Woods National Monument. They suggested that establishing thematic trails at Muir Woods National Monument is unnecessary, instead suggesting that modest interpretive signs would inform visitors just as well.

RESPONSE

The proposal to interpret various themes on trails should be viewed in the context of existing and proposed high levels of resource protection for the redwood forest ecosystem. This proposal would rely on a variety of ways to convey the thematic information, including interpretive signs. This concept would make use of existing trails as well as modified existing alignments and limited new construction to improve the trail system or to allow creek and floodplain restoration and improve the integrity of the ecosystem.

Subsequent, more detailed planning to define the specific actions to be taken within the trail corridor, including the appropriate level of interpretive signs and other elements, will be guided by the zone descriptions in the GMP. In addition, the park closes at dusk, and off-trail travel is prohibited in the park.

Trail Improvements Planned as Part of the Trails Forever Program

CONCERN STATEMENT: One commenter suggested that language from the Golden Gate National Parks Conservancy website be added to a specific section of the GMP. This language would clarify that the Trust—rather than the Presidio park site—collaborates with the National Park Service regarding trail improvements that are planned as part of the Trails Forever Program.

RESPONSE

The text in the GMP has been revised to clarify this relationship.

Mountain Biking

CONCERN STATEMENT: Commenters expressed varying positions on mountain biking within GGNRA. Certain commenters requested that GGNRA restrict all bicycles to existing paved surfaces. One commenter requested that mountain biking be prohibited from GGNRA, while another requested more mountain bike access.

RESPONSE

The National Park Service recognizes that bicycling—both on roads and on trails—is a popular means of recreation and that it expands the variety of visitor experiences available in GGNRA. As stated in the GMP, a goal of GGNRA is to establish and maintain a trail system that offers a diversity of park

experiences, including bicycling (as well as hiking, horseback riding, and other activities). Within GGNRA, mountain biking is, and will continue to be, permitted on designated trails where this use is determined through the required process. Hiking-only trails or hiking/equestrian trails are also included in the park's trail system, offering a variety of choices and experiences. The National Park Service monitors trail use and resource conditions and manages trail-based recreation to minimize visitor conflicts and resource impacts.

As stated in the GMP, bicycling may be appropriate and permitted in certain areas within the diverse opportunities, scenic corridor, evolved cultural landscape, and natural zones. The GMP identifies some specific proposals for improved or new multiuse trails. Mountain bike use would be guided by the GMP, NPS *Management Policies 2006,* and regulations.

The GMP does not propose changes to park trails within Marin County that are currently open to bicycling, as determined by prior planning efforts. The *Presidio Trails and Bikeways Master Plan and Environmental Assessment* addressed bicycling and other trail uses at the Presidio, which is outside the scope of the general management plan. Future, more detailed planning will determine management of trail-based recreation elsewhere in GGNRA, including for park lands in San Mateo County.

Marin County Trails

CONCERN STATEMENT: Commenters suggested that the Marin coastline should be a designated access area that is part of the greater San Francisco Bay Water Trail. Other commenters felt that an increase in the number of trails would result in more user conflicts. Commenters also suggested that GGNRA should continue the multiuse path from Coyote Creek at the Tamalpais Valley Community Center to Tennessee Valley, to establish a safe connecting trail from the bottom of Dias Trail into the Redwood Creek Trail and Muir Woods, and to establish a safe trail to Frank Valley. One commenter suggested that planners take into account the experience of the hiker on the new trail while planning the new trail.

RESPONSE

Support for the Bay Area Water Trail is included in the GMP in the "Common to All Action Alternatives" sections on trails and ocean stewardship. The preferred alternative also identifies specific locations for Bay Area Water Trail access, such as Kirby Cove.

Other specific recommendations for trail improvements are already noted in the GMP, such as the connection between Dias Ridge and Redwood Creek trails near Muir Beach, or would be considered in more detailed trail planning following the GMP. The "Common to All Action Alternatives" trails section provides goals and management strategies to guide planning and management of park trails. When considering any changes to trails—whether improvements to existing trails, development of new trails, or closure of trails—the National Park Service devotes careful consideration to how both people and natural resources may be affected.

RESPONSE TOPIC 9: HISTORIC RESOURCES FOR SAN MATEO COUNTY

Historic Resources for San Mateo County

CONCERN STATEMENT: San Mateo County Department of Public Works noted that Sanchez Adobe is an historic property that is owned and managed by the San Mateo County Parks Division and jointly managed and interpreted with the San Mateo County Historical Association, and that there have been discussions between GGNRA, San Mateo County Parks, and the historical association about a potential joint

partnership, which is not addressed in the Draft GMP. Other commenters stated that no historical resources were mentioned in the GMP for San Mateo County nor any reference to the Sanchez Adobe Historic Site master plan, while another commenter requested that the San Mateo County historic resource study be listed in the GMP references.

CONCERN STATEMENT: Commenters suggested that the San Francisco Bay Discovery Site needs better attention for promotional and educational reasons.

CONCERN STATEMENT: One commenter recommended archeological investigations be conducted to determine the exact location of the Guerrero Adobe at Rancho Corral de Tierra and the whaling station at Pillar Point.

CONCERN STATEMENT: Commenters suggested focusing on the Portola Expedition, and making the Sanchez Adobe Historic Site a shared multiagency visitor center.

CONCERN STATEMENT: One commenter suggested that the GMP clearly differentiate the explorers Portola and Anza.

CONCERN STATEMENT: San Mateo County Department of Public Works had concerns with the proposed NPS partnership with the San Mateo County Parks and the San Mateo County Historical Association at the Woodside Store as parking availability is minimal and the community has concerns about increases in visitation.

RESPONSE

During the final stages of preparing the Draft GMP the historic resources study (HRS) for GGNRA in San Mateo County was in the process of being completed, and therefore, was not referenced in the Draft GMP. However, the draft HRS was consulted during the drafting of the GMP. In particular the identification of resources and their significance was used in the development of the management zones and the creation of the alternatives. The draft HRS also helped identify historic properties that are listed in the affected environment section, and the area of potential effect (APE) in the GMP.

Language has been added to the GMP indicating that the Sanchez Adobe is an excellent location from which to explore partnerships in preservation and interpretation to enhance the park's connection to the Pacifica communities and to recognize the importance of the Portola Expedition. This language roughly parallels what is stated for the Woodside Store, which we understand has limited parking.

In regards to the Portola Expedition, the GMP also references the upcoming 250th anniversary of the discovery of San Francisco Bay and suggests promoting preservation and partnership-based programs for the San Francisco Bay Discovery Site on Sweeney Ridge to be developed between now and the anniversary date.

The historic resource study has been added to the GMP bibliography and the San Mateo County Historical Association has been added to the list of agencies consulted in the preparation of the GMP. We have also strengthened the language in the text about the importance of the Portola Expedition and its effects on the history of the region including the Native American inhabitants.

The final GMP includes language that the park needs to investigate the location of the Guerrero Adobe and the Pillar Point Whaling Station to determine if they are within the park boundary, and if so, to identify proper preservation strategies for each site.

RESPONSE TOPIC 10: COORDINATION WITH THE PRESIDIO TRUST

Presidio Trust

CONCERN STATEMENT: The Presidio Trust commenter stated that the *Presidio Trust Management Plan* (PTMP) supersedes the *Presidio General Management Plan Amendment* (GMPA) as it applies to the area under jurisdiction of the Presidio Trust.

CONCERN STATEMENT: The Presidio Trust suggested that the Draft GMP be updated to include the discussions between the Presidio Trust and the National Park Service regarding identifying another location for a centralized maintenance facility at a location outside of the cavalry stables.

CONCERN STATEMENT: The Presidio Trust noted that references to resources within the Presidio of San Francisco should be limited or qualified based on expected impacts within the planning area. As written in the Draft GMP, the document could give the reader a false impression that the Presidio is actually within the planning area.

CONCERN STATEMENT: The Presidio Trust stated that the rare plants found at the Presidio are not within the GMP planning area and, therefore, not part of the affected environment and would not be affected by implementation of any alternative, and as such should not be included in the GMP.

CONCERN STATEMENT: The Presidio Trust noted that they should be acknowledged within the GMP for funding volunteer opportunities within GGNRA, including trail building, habitat restoration and conservation, and organized youth programs.

CONCERN STATEMENT: The Presidio Trust stated that the visitation numbers in the Draft GMP are inflated and misleading, stating that the visitors to the Presidio and other public lands outside the planning area are included in the overall number of visitors to GGNRA.

CONCERN STATEMENT: The Presidio Trust stated that the discussion on watersheds is limited to the Presidio, which is not part of the affected environment and should be omitted. In addition, the discussion incorrectly implies that the Presidio East watershed is managed by the National Park Service.

CONCERN STATEMENT: The Presidio Trust suggested that it should be acknowledged that they funded the water quality monitoring for the urban watershed project in Area B, and that the urban watershed project has since been replaced by Project WISE (Watersheds Inspiring Student Education) through the Golden Gate National Parks Conservancy. The discussion indicates that water quality monitoring has been conducted "through a contract with the Presidio." The Presidio is not a management agency such as the Presidio Trust or the National Park Service, but is a park site. An appropriate reference should be provided.

CONCERN STATEMENT: The Presidio Trust requested that the National Park Service delete the sentence stating that the GMPA remains as the management plan for Presidio Area A.

RESPONSE

Specific concerns about the Draft GMP/EIS map and text descriptions of the Presidio Trust management policies, the diverse natural and cultural resources managed by the Presidio Trust, public programs offered, and the relationship among the Presidio Trust, GGNRA, and Golden Gate National Parks Conservancy have been addressed to provide greater clarity and avoid misrepresenting the proposals in the GMP and their potential effects. This additional clarity has not substantially changed the different action alternatives.

Changes have been made to the "Facilities for Maintenance, Public Safety, and Collections Storage" subsection of the "Elements Common to All Action Alternatives" section to reflect recent discussions on a centralized maintenance facility within the Presidio.

Fire Department Operation within the Presidio

CONCERN STATEMENT: The Presidio Trust noted that the GMP should note that structural fires within the Presidio are handled by the San Francisco Fire Department and not the Presidio Fire Department.

RESPONSE

The appropriate section of the GMP has been corrected.

RESPONSE TOPIC 11: SAN FRANCISCO PENINSULA WATERSHED LANDS

Alternatives and Environmental Consequences

CONCERN STATEMENT: The San Francisco Public Utilities Commission (SFPUC) expressed concern that the Draft GMP is deficient in the description of the alternatives and does not adequately describe the environmental consequences of the actions. Additionally, the SFPUC wrote that the Draft GMP does not adequately address possible conflicts between the proposed action and the objectives of local land use plans, policies, and controls for the area concerned as required by 40 CFR Part 1508.8.

CONCERN STATEMENT: SFPUC stated that the Draft GMP repeatedly describes the Peninsula watershed as park lands that would receive park management guidance under the Draft GMP, which conflates GGNRA's limited responsibility to administer the scenic easement and recreation and scenic easement. Further, the figures in the Draft GMP depicting the boundaries of these easements are inaccurate: the recreation and scenic easement does not include the area of the Peninsula watershed known as Polhemus and the San Mateo Creek area below Crystal Springs Dam.

CONCERN STATEMENT: SFPUC stated that the analysis of water resources in the Peninsula watershed in San Mateo County should be discussed in greater detail, if the watershed is included as part of the park, and noted that data is available.

CONCERN STATEMENT: SFPUC questioned the boundary adjustment proposed for McNee Ranch in San Mateo County and requested more information in analyzing the impacts of the proposal.

CONCERN STATEMENT: SFPUC urged GGNRA to either amend the existing alternatives for Ocean Beach to specifically provide for the option of continued operation, maintenance, and upgrade of existing critical infrastructure, including the Oceanside Wastewater Treatment Plant and the Westside Transport Box, or to create a new alternative that provides this option.

RESPONSE

Many specific comments in the SFPUC letter request more detailed description of specific proposals and analysis of their impacts. The general management plan is a long-term, programmatic planning document and precedes more detailed implementation planning that will provide the details of interest to SFPUC for specific plans and projects. These subsequent implementation plans and their associated environmental compliance (e.g., NEPA) will assess implementation alternatives, resources, and impacts at a more site-specific level than the GMP. SFPUC also identified concerns related to uses and plans for NPS lands adjacent to SFPUC lands. In areas of the park adjacent to SFPUC-managed lands, the National Park Service would coordinate

more detailed implementation planning and actions with the appropriate city department to address concerns including compatibility with SFPUC current planning and management.

Text describing GMP alternatives for the NPS Peninsula watershed easements has been clarified to refer to the 2001 *Peninsula Watershed Management Plan* and to clarify the NPS role, acknowledging that these actions are within SFPUC jurisdiction and subject to SFPUC watershed approval or initiation and implementation. Accordingly, additional water resources data was not added to the GMP as the management of the areas has been clarified. General management plan language related to the Peninsula watershed lands that are within the NPS-administered easements describes NPS actions as cooperating with SFPUC and promoting or encouraging actions that are consistent with the easements and the 2001 *Peninsula Watershed Management Plan. "*

Regarding the "Boundary Adjustments" section for McNee Ranch, San Mateo County, the boundary adjustment described in the Draft GMP states that this action would be for the purpose of correcting a technical error and would facilitate cooperative management. It is not a proposal for acquisition, and the specific actions cited are not GMP proposals. Specific actions that may be proposed in the future would be subject to NEPA and California Environmental Quality Act (CEQA) analysis, depending on the nature of the proposed action. Text in the "Boundary Adjustments" section for McNee Ranch, San Mateo County, has been clarified.

The National Park Service acknowledges that SFPUC will continue to operate and maintain its critical infrastructure. Text for Ocean Beach (alternative 1 description for Ocean Beach, both zones paragraph) has been modified to clarify that it refers to NPS facilities that would be relocated. Other corrections as suggested by SFPUC have also been made, including the easement boundary corrections.

Easements Information and Display

CONCERN STATEMENT: Commenters stated that the GMP should accurately represent the NPS easement agreements and provide information on those agreements to allow the public and park personnel to reference the agreements. The map in the Draft GMP should accurately represent the easement agreement and information on all easement agreements. Furthermore, information on the easement agreement with the City of Pacifica should be accurately depicted and the easement information provided. Commenters suggested that in addition to accurately depicting easement agreements and land ownership in the GMP, GGNRA should ensure that jurisdiction is accurately presented in all published GGNRA maps, and that GGNRA law enforcement fully understand those jurisdictions and can communicate those to the public.

RESPONSE

Sections of the GMP that refer to the easements have been clarified. Maps depicting the SFPUC easements have been corrected to accurately show the easements, remove any lands not in the easements, and include the (2007) conservation easement over the 7.2 acre parcel adjacent to the east terminus of Sneath Lane, known as the Sweeney Ridge Gateway. Text describing the NPS-administered easements over the Peninsula watershed has been clarified, as suggested to allow park staff and the public to reference the easements. Sections of the easement documents have been added to the GMP appendix.

The SFPUC requested that all maps and brochures accurately present the GGNRA jurisdiction and that GGNRA law enforcement staff understand and communicate GGNRA jurisdiction. Although

this comment is not within the scope of the GMP, this is the practice and goal of the park.

PUC Scenic Easement and Legislation

CONCERN STATEMENT: SFPUC stated that water operations and all utility functions are expressly excluded from NPS management or restrictions under the terms of the SFPUC easements, and that the GMP should acknowledge the SFPUC *Peninsula Watershed Management Plan* and compare it to the GMP alternatives, specifically which projects are proposed for the watershed and impacts of new facilities in a closed area. Furthermore, while terming the watershed to be "park lands," and acknowledging that federal legislation controls management activities, there is no mention of the legislation that transferred the easements to the administration of the National Park Service. Congress has mandated that the scenic easements shall be administered in accordance with their terms.

RESPONSE

The GMP has been updated to reference the legislation in the legislation summary in appendix A and to expand the description of the *Peninsula Watershed Management Plan*.

Ocean Beach Master Plan – Considerations in Analysis

CONCERN STATEMENT: SFPUC expressed concern with an absence of analysis of impacts with the Ocean Beach master plan process led by San Francisco Planning and Urban Research (SPUR) in cooperation with the City and County of San Francisco, the National Park Service, and the California Coastal Conservancy. Another commenter questioned the NPS authority in partnering with local and state agencies and organizations. Other commenters also questioned the NPS authority to make changes at the recreation area with what they viewed as limited public input.

RESPONSE

The GMP references the Ocean Beach master plan in the description of alternatives. This visioning process was led by San Francisco Planning and Urban Research (SPUR) in cooperation with the National Park Service, City and County of San Francisco, and California Coastal Conservancy. The plan is a SPUR document. The Draft GMP concepts informed the SPUR Ocean Beach master plan process, and the GMP preferred alternative and the concepts identified in the Ocean Beach master plan are compatible and complementary. Specific actions recommended in the SPUR Ocean Beach master plan will require additional analysis to confirm feasibility, and additional environmental analysis prior to implementation by the responsible agency. See concern 36604 and its response for further information on how alternatives and specific proposed actions have been addressed in the GMP.

Regarding the concern about public involvement in the planning process, please refer to concerns in the section titled "Public Comment Period and Public Meetings" and the corresponding response.

Regarding concerns about the ability of local and state governments / organizations to cooperate with the National Park Service due to limited funding, interagency cooperation by land managers also has the potential to provide efficiencies in operation that could provide cost savings and more effective land management.

RESPONSE TOPIC 12: BACKGROUND: PROJECT INFORMATION AND BACKGROUND – GENERAL

Park Relationships with the Coast Miwok and the Ohlone Tribes

CONCERN STATEMENT: One commenter suggested that the National Park Service

research treaties that the U.S. (or State of California or other legally constituted governmental bodies) has signed with sovereign American Indian nations or tribes to make sure that they are accorded their rights.

RESPONSE

The obligation for federal agencies, including the National Park Service, to engage with American Indian tribes on a government-to-government basis is based on the U.S. Constitution and federal treaties, statutes, executive orders, and policies. GGNRA is committed to fulfilling its tribal consultation obligations by adhering to the consultation framework in recognition of American Indian tribes' right to self-governance and tribal sovereignty. The park maintains relationships with the associated Coast Miwok and the Ohlone, and will continue to consult with them on the GMP and in subsequent planning and implementation activities.

Coastal Zone Management Act Consistency for Public Access and New Facilities

CONCERN STATEMENT: The San Francisco Bay Conservation and Development Commission stated that any project identified in the Draft GMP that requires bay fill or new shoreline facilities, such as the improvements to the historic Alcatraz pier (Pier 4), should address public access improvements.

RESPONSE

The National Park Service works with other federal, state, and local agencies to ensure management actions within GGNRA are appropriate for both the resources within the recreation area and the activities that visitors partake in. The National Park Service examined the policies of the California Coastal Management Program, which is administered by the California Coastal Commission (CCC), and the San Francisco Bay Plan, which is administered by the San Francisco Bay Conservation and Development Commission (BCDC), during the development of the GMP. The National Park Service determined that the plan was consistent with both the California Coastal Management Program and the San Francisco Bay Plan. The National Park Service sent a copy of the plan to the administering agencies for review, and received concurrence from both agencies regarding this consistency. This information is further explained in the FEIS/GMP in the section titled "Coastal Zone Management Act Consistency" within "Consultation, Coordination, and Preparation."

The GMP aims to improve public access to park lands and to waterfront areas within park lands while accounting for the preservation of cultural and natural resources. Potential actions in the plan that could improve public access to park lands and to waterfront areas include expanding regional park ferry access, adding new ferry departure points for Alcatraz Island, and improving automobile circulation in certain areas. In addition, the plan aims to expand nonmotorized access to waterfront areas and better connect communities to park lands through improvements to the park's existing trail system and by linking park trails with local and regional trail networks.

Project-specific consultation with the CCC, BCDC, and other federal, state, and local agencies will occur in the future as specific components of the plan are carried out. Detailed project-specific plans, such as potential improvements to Pier 4 at Fort Mason, will account for the policies of the California Coastal Program and the Bay Area Plan, including "maximum feasible access to and along the waterfront."

Coordination with Additional Agencies and Groups

CONCERN STATEMENT: Commenters suggested coordinating with additional agencies and groups such as: San Mateo

County Historical Association, the National Oceanic and Atmospheric Administration (NOAA) (to explore seabird protection and disturbance on Alcatraz Island and coordination of lighthouse properties at Alcatraz Island), the Crissy Field Dog Group, the Montara Dog Group, the San Mateo County Historic Resources Advisory Board, San Mateo County Historical Society, Caltrans, San Mateo County Convention and Visitors Bureau, U.S. Coast Guard, equestrian groups, and sailing groups before proceeding to the final GMP. The California Department of Transportation was concerned with the role of inter-agency coordinators throughout the process and alternatives.

RESPONSE

Consultation and coordination in the development of the plan was extensive and is summarized in the section titled "Consultation, Coordination, and Preparation." Between the draft and final GMP/EIS, additional consultation was conducted with some agencies. Additional coordination would be conducted during more detailed implementation planning where NPS actions could affect other public lands, where other approvals are needed, or where there are opportunities for collaboration that are consistent with the guiding principles identified in this plan. See "Guiding Principles for Park Management" for "Civic Engagement," "Regional Collaboration," and "Partnerships" in the "Background" section of the GMP. Also, refer to "Consultation, Coordination, and Preparation" for more details of how consultation with other agencies, officials, and organizations was conducted.

Management Policy and Map Review

CONCERN STATEMENT: Several commenters suggested that additional management policies and maps be reviewed, while being in compliance with other plans and policies. Commenters, including the California Department of Transportation, stated that if the National Park Service closes State Route 1 due to a catastrophic landslide, an independent assessment would need to be written and any project in the GMP would need to be consistent with the San Francisco Bay Plan policies on fish, aquatic organisms, and wildlife. The San Francisco Bay Conservation and Development Commission recommended that a determination under Coastal Zone Management Act consistency mandates would be required prior to implementation of any proposed activities at the recreation area. NOAA suggested that the GMP include the current management policies of NOAA's joint management plan for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries. The Federal Emergency Management Agency (FEMA) stated that the flood insurance rate maps for the City and County of San Francisco, San Mateo County, and Marin County were revised in May 2009 and should be reviewed within the GMP.

RESPONSE

The National Park Service has worked, and will continue to work, with other agencies and programs to ensure that any management actions taken within the recreation area are consistent with other policies or management agencies. We acknowledge the San Francisco Bay Conservation and Development Commission's role in making consistency determinations with the San Francisco Bay Plan. Text has been added to the "Coastal Zone Management Act Consistency" section in the "Other Analyses and Statutory Considerations" section to clarify the role of BCDC and that a consistency determination will be required prior to implementation of actions in the GMP.

Map Corrections and Suggestions

CONCERN STATEMENT: Commenters requested that maps in the Draft GMP be improved in various ways including showing trail connections and future transportation conditions, improving trail maps, correcting

the map showing easement boundaries, correcting discrepancies on the San Francisco transportation network maps, and providing plastic map overlays. One commenter suggested that the no-action alternative map should be made clearer and rendered in the same style as the action alternative maps.

RESPONSE

The no-action alternative map is replicated directly from the 1980 general management plan. The 1980 general management plan can be referenced for more detail on the map and related description of the preferred alternative. The map used a different zoning scheme and mapping protocol, so it cannot be replicated in the same style as the action alternatives. Other suggestions were reviewed. Where appropriate, changes have been made.

BACKGROUND: MARIN COUNTY, DEPARTMENT OF PUBLIC WORKS

Marin County, Department of Public Works

CONCERN STATEMENT: Marin County Department of Public Works requested that the word "created" be replaced with "to be developed" in a reference to a welcome center in the vicinity of the Manzanita Park & Ride.

CONCERN STATEMENT: Marin County Department of Public Works noted that the proposed welcome center at State Route 1/Manzanita lacks design details, and requested to see preliminary designs to analyze grades, alignment, and topography to determine grading necessary and to ensure it properly conforms to existing infrastructure.

RESPONSE

The intent of the welcome center is to serve as a transportation hub that would include parking, interpretation, and a shuttle stop. The facility has been scaled down in the FGMP and the description has been modified to clarify its purpose. The revised language is located in the preferred alternative for Muir Woods National Monument. Specific details of such a center, including design details and cost estimates, would be determined during a planning effort specific to that center and are therefore not included in this GMP.

Public Comment Period and Public Meetings

CONCERN STATEMENT: Commenters said the 60-day comment period should be lengthened by 2 months. Commenters also stated that more public meetings should be held and better publicity should be used to notify the public of the Draft GMP. One additional commenter expressed discontent with open houses and suggested that a public hearing format should be used.

RESPONSE

The 60-day public comment period opened on September 9, 2011, and was extended 30 days to accommodate public requests. The full public comment period ran from September 9, 2011, through December 9, 2011. During the public comment period, multiple opportunities were provided for public input. This included three meetings held in San Francisco, Pacifica, and Mill Valley, California. Meetings were advertised through a press release, postcard, and email sent to the park's mailing list; the park's website; the NPS Planning, Environment, and Public Comment (PEPC) website; and through Twitter. Postcards and flyers were also available at visitor destinations in the park. The public open houses were one tool used to collect verbal and written comments on the Draft GMP. Comments were also accepted on PEPC and by mail.

Open houses are a type of public meeting frequently used by public agencies because they offer people opportunities to engage in conversation with members of the planning

team. The open houses enabled the NPS planning team to listen to people's comments, explain the alternatives and concepts in the draft plan, and collect feedback from the public. Open houses gave people opportunities to offer comments without the pressure of public speaking. This format allows participation by all types of people with all types of communication styles and allows agency staff to better understand individual questions and concerns.

Addition of Terms to the Glossary

CONCERN STATEMENT: Commenters requested that additional terms in the Draft GMP be added to the definitions section of the document, including: compatible recreation, exotic species, nonnative species, invasive species, family events, aggressively addressing, external threats, backcountry, controlling access, and sustainability.

RESPONSE

To address this concern, several specialized terms have been added to the glossary in the FGMP/EIS. Other words or phrases identified as confusing by commenters have been changed to clarify the intent of the document.

CONCERN STATEMENT: One commenter stated that the analysis of the environmentally preferred alternative is not correct. In their view, alternative 2 should be the environmentally preferred alternative, based on criteria.

RESPONSE

The NPS Director's Order 12 handbook, *Conservation Planning, Environmental Impact Analysis, and Decision Making*, interprets the environmentally preferable alternative in section 2.7.D as the "alternative that will promote the national environmental policy expressed in NEPA (Sec. 101 (b))." As stated in the handbook, this is consistent with the definition of the environmentally preferable alternative given by CEQA and contained in the Department of the Interior NEPA guidance.

Under the criteria of the environmentally preferable alternative, values related to natural resources, cultural resources, and human experiences must all be considered and weighed. Therefore, the environmentally preferable alternative analysis is not merely a measurement of the alternative that is most beneficial to biological and ecological resources. The analysis of the environmentally preferable criteria and the identification of the environmentally preferable alternative are not binding decisions by the National Park Service. The NPS preferred alternative may or may not be the same as the environmentally preferable alternative.

Replacement of Equestrian Facilities at Rancho Corral de Tierra with Fire Fighting Facilities

CONCERN STATEMENT: SFPUC suggested that if the existing equestrian facilities at Rancho Corral de Tierra include infrastructure that could be used for firefighting efforts, an evaluation into whether the potential use of those facilities for firefighting efforts outweighs the recreational benefits of those equestrian facilities, and therefore whether the removal of the equestrian facilities should be incorporated into the preferred alternative.

RESPONSE

Within the GMP preferred alternative, it is proposed that equestrian facilities would be retained, with the exact location, type, and scale of facility improvements as well as the mix of other uses determined in future planning efforts. The GMP does not address the logistics of fire management efforts including repurposing existing public serving facilities for fire protection needs within GGNRA. Fire management for all NPS-managed lands is addressed in the GGNRA

fire management plan (FMP). This document is scheduled to be updated in 2013.

RESPONSE TOPIC 13: THE ALTERNATIVES – MANAGEMENT ZONES

Additional Scenic Values and Opportunities

CONCERN STATEMENT: Commenters suggested that there are more scenic values and opportunities within the park than the Draft GMP identifies, specifically along trails, the Marin City Ridge, Gerbode Valley, Ocean Beach, Fort Funston, and Muir Beach. In addition, one commenter stated that the proposed Draft GMP management zones do not adequately address the 1980 natural appearance subzones for areas that appear to be natural but are actually high visitation areas, for instance Ocean Beach and Fort Funston.

RESPONSE

Scenic beauty is included in the "Foundation Statements: Guidance for Planning" portion of the GMP's "Background" section, which acknowledges the fundamental resources and values related to this resource. Scenic views are also addressed in the "Management Zones" section of the document for each zone. The scenic corridor zone, for instance, includes both roads and trails, such as the Sneath Lane trail to Sweeney Ridge and the ridge top area. Roads and trails have been included, at times, as scenic corridor zones due to the scenic views available from them.

New zoning replaces the zoning in the 1980 GMP for all lands included in the GMP planning area. To clarify, Rodeo Lagoon and Lands End are not in the scenic corridor zone as one commenter stated. Rodeo Lagoon is in the sensitive resources zone, and Lands End is in the evolved cultural landscape zone. Fort Funston and Ocean Beach each have diverse opportunity zones in the higher visitor use areas. Detailed descriptions of each zone can be found in the "Management Zones" subsection of the "Building the Management Alternatives" section. Additional concerns about zoning within this plan have been addressed under the larger topic of "Zoning." Please see the responses to concerns 36654, 36495, 36494 and others for clarifications of the management zones.

Extension of the Sensitive Resources Zone

CONCERN STATEMENT: Commenters offered suggestions on areas that should be managed as sensitive resources zones, such as: all nearshore/offshore rocks and sea stacks in San Francisco, the Wildlife Protection Area in the Presidio, areas that are seasonally managed for breeding birds on Alcatraz, the Crissy Field Wildlife Protection Area, and the area of Ocean Beach that supports wintering snowy plovers. The NOAA suggested that if GGNRA is expanded to include the area offshore of the San Mateo County coast, that a sensitive resources zone should be designated for the area of Devil's Slide Rock and Mainland from Gray Whale Cove to Pedro Point (Point San Pedro).

CONCERN STATEMENT: NOAA, the U.S. Fish and Wildlife Service (USFWS), and other commenters noted support for extending the Sensitive Resources Zone to 300 feet from Alcatraz Island's shore, and suggested that buoys will be nearly essential for effectiveness. One commenter asked if the 300-foot sensitive resources zone was necessary, and if so, how it would be enforced.

RESPONSE

A number of changes to the GMP have been made and address these concerns. Changes include the addition of clarifying language to the plan and some changes to the zoning maps. Where changes mentioned by commenters were not appropriate, clarifications are also offered below. The

zoning map for San Francisco within the preferred alternative has been modified to show the nearshore portion of the Crissy Field Wildlife Protection Area as a sensitive resources zone. The terrestrial portion of the Wildlife Protection Area is not part of this plan and was addressed in the General Management Plan Update for the Presidio and the Crissy Field Environmental Assessment.

Corrections have been made to Table 10: Comparison of Alternatives for Alcatraz Island, so that it correctly matches the description of the preferred alternative related to the sensitive resources zone in the "Nearshore Bay Environment" section, which states that this zone would be demarcated by warning buoys and closed to boats year round. Details of enforcement of the closure will be provided when the sensitive resources zone is established.

The sensitive resources zone description related to visitor experience has been clarified. Any limitations to activities that would be allowed within this zone are needed to better meet the intention of this zoning designation. In general, visitor access would be restricted or prohibited, particularly during the times of the year when species are the most sensitive to visitor activities. The portion of Ocean Beach inhabited by the federally threatened western snowy plover is heavily used by the public and designating this area as a sensitive resources zone would be incompatible with visitor use in the preferred alternative. Designating this area as a natural zone allows visitor use to be managed to preserve resources and could involve controlled access.

The nearshore/offshore rocks and sea stacks in San Francisco are dispersed over a broad area and contain lower concentrations of dispersed sensitive resources than the sensitive resources zones identified in the preferred alternative. Designation of areas as sensitive resources zones in the plan has been reserved for areas that are highly sensitive to a variety of activities and warrant highly controlled access.

The map of proposed boundary adjustments has been updated to show the proposed zoning that would be applied to the offshore waters in San Mateo County, including a sensitive resources zone corresponding to the Egg Rock to Devil's Slide Special Closure. The proposed zoning would be evaluated at the time the boundary adjustments are enacted and the state lands lease is acquired.

ALTERNATIVES – ELEMENTS COMMON TO ALL

Recommended Changes by NOAA

CONCERN STATEMENT: NOAA (Gulf of the Farallones National Marine Sanctuary) recommended text changes throughout the Draft GMP to include additional language for implementation planning, roosting habitat, sea level rise and coastal vulnerability, carbon footprint and emissions mitigation, specific use zones, ocean stewardship, management strategies, the nearshore ocean environment, boundaries, cost effectiveness, and other editorial suggestions.

RESPONSE

The comments submitted by NOAA / Gulf of the Farallones National Marine Sanctuary were wide-ranging, thorough, and insightful. After careful analysis by the planning team, almost every suggestion was incorporated in the final document. The suggestions for changing the natural resource goals related to responding to climate change and urban pressures were made. The natural resource goals for the preferred alternative, alongside continued consultation with the National Marine Fisheries Service (NMFS) adequately address NPS responsibilities under the Endangered Species Act (ESA). Some of the suggestions resulted in changes in impact assessment or helped to refine the description of the alternatives. Where these are substantive, they have been described in

other sections of this report on public comments.

ALTERNATIVES – PARKWIDE

Construction and Birds on Alcatraz

CONCERN STATEMENT: One commenter suggested that wildlife sensitivity training should be mandatory for park staff and contractors on Alcatraz Island.

RESPONSE

Training for contractors to avoid impacting birds during construction (rehabilitation) is addressed in the *Alcatraz Island Historic Preservation and Safety Construction Program Environmental Impact Statement* for the Alcatraz construction projects it included. Specific reference to training park staff and contractors has been added to the list of mitigation measures in the general management plan. The National Park Service strives to avoid impacts to sensitive species when management actions are taken. Impacts to threatened and endangered species resulting from facility improvements or construction would be determined during project proposal and alignment processes rather than in this GMP document. With any new facility, including new or improved trails, the National Park Service strives to avoid endangered species habitat as much as possible in design. For example, trail work occurring near marbled murrelet habitat in other parts of GGNRA could occur during non-breeding season when murrelets are at sea rather than in the conifer forests. This strategy would be similar to those implemented for spotted owls. The mitigation measures section of the GMP addresses avoidance of impacts and use of conservation measures taken in consultation with the appropriate resource agencies for both operations and for new facilities and management actions.

Costs

CONCERN STATEMENT: One commenter expressed concern that the cost estimate for the preferred alternative is too high when compared to the no-action alternative, especially in the current economic climate.

RESPONSE

Footnotes and text in the DGMP/DEIS "Executive Summary" and "Table 11: Costs Associated with the Implementation of the No-action Alternative for Park Lands in Marin, San Francisco, and San Mateo Counties" explain the approach to identifying costs and why the no-action alternative costs are substantially lower than the action alternatives. To summarize, NPS planning standards direct planners to only include in the no-action alternative the capital costs for projects already approved and funded. Federal approval and funding usually only covers projects to be executed over the next few years. However, the standards also direct planners to identify all major capital expenditures anticipated over the next 20 years for all the action alternatives. This makes a direct comparison uneven because it suggests the no-action alternative would be substantially less costly, whereas substantially more than $10,460,000 would be expended under the no-action alternative over the 20-year life of the GMP.

Education and Interpretation Efforts

CONCERN STATEMENT: Commenters had several suggestions regarding education and interpretation efforts at GGNRA, such as: educating the public on invasive species, providing educational films with public TV, educating visitors about the role of the people in founding and sustaining the park, incorporating carbon emissions reduction into park interpretation, offering educational walks for visitors, and emphasizing the "stewardship," "partnership," and "deep personal connection" that visitors and volunteers experience within GGNRA.

RESPONSE

These suggestions are consistent with the GMP. The National Park Service strives to be proactive in interpretive and educational programming on these topics. The GMP touches on general interpretive themes from which specific programs, such as those suggested by commenters, may be developed. GGNRA's comprehensive interpretive plan provides more specifics about interpretative themes and stories, areas of emphasis, and future recommendations, and can be found on the GGNRA website. Within the GMP, please refer to "Background," under "Guiding Principles for Park Management," and the "Elements Common to all Action Alternatives" section for examples of how interpretive and educational programming include these topics.

ALTERNATIVES – ALCATRAZ ISLAND

New Construction, Waterfowl, and Pest Management on Alcatraz

CONCERN STATEMENT: Commenters want to know more about how the National Park Service plans to manage Alcatraz Island, specifically how infrastructure such as buildings will be balanced with the presence of birds on the island. Commenters suggested establishing a roof garden at the top of the Alcatraz Island prison as well as a tunnel network on the parade grounds that leads to the agave trail. Commenters also stated that the proposed rehabilitation of the New Industries Building should be limited to outside the waterbird breeding season and such rehabilitation would have negative effects on waterbirds. One commenter stated that if a service kitchen is installed, then a preventative rodent and pest plan should be developed and implemented. Commenters also suggested that the GMP should include a decision-making method for when, or if, some preservation will not be conducted due to budgetary or other constraints.

RESPONSE

Alcatraz is a national historic landmark and as such, any new construction (such as a tunnel under the parade ground) would create an adverse effect to the integrity of the site. The park integrated pest manager maintains plans for the island. The park adheres to guidelines in the *Alcatraz Island Historic Preservation and Safety Construction Program Final Environmental Impact Statement* regarding preservation work on Alcatraz, which requires constant consultation and avoiding implementation of projects during the bird nesting season.

The *2010 Cultural Landscape Report for Alcatraz Island National Historic Landmark* sets clear treatment priorities for rehabilitating structures and landscape features on the island. Solar panels were recently installed on the Alcatraz cell house roof to reduce greenhouse gas emissions from fossil-fuel based energy production on the island using renewable energy sources in order to meet current and future energy demands while minimizing cultural and natural resource impacts. Consequently, a roof garden on the prison building is not feasible.

New Facilities on Alcatraz Island

CONCERN STATEMENT: One commenter suggested that a second dock at the fixed wharf areas of Alcatraz Island could improve visitor access. This dock should implement new design technology for various vessels, types of operations, technology, and new fuel types.

RESPONSE

The suggested actions provided by the commenter could be addressed in future implementation planning for more efficient and sustainable ferry service to Alcatraz. This planning is not within the scope of the GMP. Concerning the idea of an additional dock, construction of an additional dock for a

second ferry has not been found to be necessary or consistent with historic preservation guidelines for the island.

Nesting Bird Colonies and Boater Access

CONCERN STATEMENT: One commenter suggested restricting boater access around Alcatraz Island as this can cause loss of nesting colonies.

RESPONSE

The preferred alternative for Alcatraz Island includes a nearshore sensitive resources zone that extends 300 feet around most of Alcatraz and is closed to boating year round.

New Industries Building and Special Events

CONCERN STATEMENT: One commenter posed questions regarding the availability of the New Industries Building for special events, and the times that those special events would be allowed to occur.

RESPONSE

The preferred alternative states that the second floor of the New Industries Building would be rehabilitated as a multipurpose facility. It would include flexible space and accommodate a variety of activities with appropriate controls to minimize impacts during bird nesting season. The specific details on how special events will be planned and managed in the rehabilitated facility will be identified in future operational plans and are outside the scope of the GMP.

Suggested Educational Components

CONCERN STATEMENT: Commenters offered suggestions on what educational components should be identified at Alcatraz Island, including: the island's geologic and biotic conditions, the use of the island by indigenous people, the sensitivity of nesting birds, the natural history of the island, the use of alternative energy on the island, and more emphasis on the Civil War era. One commenter also suggested installing buoys at the historic distance from the island. One commenter suggested additional visitation opportunities such as multiple entrances to the cell house tiers, adding garden and walking trails to existing tours, and offering additional opportunities for visitors to learn more about the many eras of Alcatraz history. NOAA suggested reducing CO2 emissions by using alternative energy.

RESPONSE

The GMP includes general interpretive themes from which specific interpretive programs, such as those offered by commenters, may be developed. Commenters may reference GGNRA's comprehensive interpretive plan on the GGNRA website for more specifics about interpretative stories and themes, areas of emphasis, and future recommendations. Concerning reducing CO2 emissions through use of alternative energy, see the response to a concern under Response Topic 13: The Alternatives, Alternatives – New Elements of the Alternatives, titled "Climate Change".

The preferred alternative includes plans for buoys 300 feet around Alcatraz Island to replicate the historic no trespass zone. While the buoys would not be placed at the exact location as they were historically, placement would be in close proximity for the purposes of protecting the natural resources and replicating the historic feel of the island.

Interpretive Sounds

CONCERN STATEMENT: One commenter asked if GGNRA incorporates "typical sounds" for prisoners, meal calls, etc. with the natural soundscape.

RESPONSE

The GMP does not address interpretive themes and components to the level of detail requested. When visitors experience the island, it is unavoidable to hear the natural soundscape of the island. If they choose to participate in the island's audio tour, visitors will hear sounds that characterized the historic prison, such as clanging metal, footsteps, etc.

Breeding Birds and Sensitive Resources Zone

CONCERN STATEMENT: One commenter suggested that areas of Alcatraz Island that are seasonally managed for breeding birds should be given sensitive resources zone designation during the breeding season, and that such areas should be so indicated on the management zones map.

RESPONSE

The entire Alcatraz Island is designated a national historic landmark for its exceptional historic significance. Because alternative 3 would focus management on the park's nationally important resources and promote visitor enjoyment and appreciation for those "national treasures," designating a sensitive resources zone to protect natural resources on the island was not fully compatible with this alternative. However, all of the zones would protect native wildlife and wildlife habitat to the greatest extent possible. With the exception of the parade ground, the majority of the bird breeding habitat within the evolved cultural landscape zone will be closed to the public during nesting season. For further clarification on how impact analysis concerning birds at Alcatraz Island has been handled in this plan, please see the NPS response under the topic of "Birds at Alcatraz Island" relating to multiple concerns.

ALTERNATIVES – MARIN COUNTY

Cabins and Food Facilities in Marin County

CONCERN STATEMENT: Commenters stated opposition to developing proposed cabins at Kirby Cove and the proposed small food/information kiosk at Tennessee Valley Trailhead and suggested that development be confined to areas outside GGNRA boundaries, relying on private development to provide visitor services.

RESPONSE

Adding a modest number of rustic cabins to the existing Kirby Cove campground would extend an overnight opportunity in the park to people who might not otherwise come and would be designed to be compatible with this setting if implemented. Such an addition is consistent with the concept of Alternative 1—Connecting People with the Parks. The number, location, size, and style of the cabins would be determined through more detailed planning that could follow the GMP. A small kiosk at the Tennessee Valley Trailhead would be within the developed trailhead/parking area to provide basic snacks and information to park visitors.

Removal of Trails to Offset New Trail Construction

CONCERN STATEMENT: One commenter suggests that any redesigned or new trails deemed essential should be offset by the removal of existing trails nearby.

RESPONSE

Alternative 1 identifies the conversion of unnecessary management roads to trails in several locations, reducing the overall footprint of development in the park. The "Trails" section (in "Elements Common to All Action Alternatives") includes a goal of integrating improvements to the surrounding cultural landscape and natural habitats when

creating or rehabilitating trails and converting unnecessary management roads to trails. The park will continue the practice of identifying opportunities to include restoration and removal of visitor created social trails and unnecessary facilities and restoring disturbed natural areas when planning and implementing new trail construction.

Improvements to Point Bonita Lighthouse

CONCERN STATEMENT: Commenters suggested that GGNRA should improve the Point Bonita lighthouse area, add a bathroom at the lighthouse, redesign the two picnic areas, and have access to the fog horn building.

RESPONSE

Recent improvements to the Point Bonita Lighthouse trailhead have been completed and a restroom will be added to this area in the near future. The fog horn building is currently managed by the Coast Guard and does not serve a visitor function. Although there have been some requests to open it to the public, there are no current plans to do so as major upgrades would be needed for accessibility and safety.

Updating Structures at Slide Ranch

CONCERN STATEMENT: Commenters, including the NOAA, noted that historic structures should not be updated or expanded (maintaining them is acceptable) and that improving the facilities at Slide Ranch should be weighed against information related to sea level rise, storm surges, and known geologic conditions.

RESPONSE

Buildings at Slide Ranch are not classified as historic properties within the Secretary of the Interior's standards. The buildings at Slide Ranch would be treated as any other facility at the park if any modifications were to be considered in the future. Before any changes are made to a building or facility at GGNRA, a careful environmental review as part of the NEPA process would be conducted to ensure that changes are warranted and appropriate.

Volunteer Program

CONCERN STATEMENT: One commenter suggested that the GMP include a discussion regarding the volunteer programs in the Marin Headlands, which has trained hundreds of volunteers to become stewards and naturalist advocates for the region.

RESPONSE

The National Park Service recognizes the important and unique role that volunteers at GGNRA play. GGNRA has more than 30,000 volunteers annually who assist in a variety of tasks from stewardship of lands to education of school children. They are critical to the successful management and operations of the parks. Recognition of the importance of volunteers is referenced in the "Affected Environment" section "Park Management, Operations, and Facilities."

Inclusion of Water Quality Projects into Alternative 1

CONCERN STATEMENT: The NOAA requested that the National Park Service move projects that can improve water quality from alternative 2 into the preferred alternative.

RESPONSE

In developing the draft plan, the National Park Service reviewed the water quality-related projects in alternative 2 and incorporated several into the preferred alternative. Changes included, for example, the removal of all facilities and the restoration of wetland and riparian habitat in

the lower Tennessee Valley. Subsequent review did not identify other projects in alternative 2 that could be incorporated in the final preferred alternative; however, if climate change results in unforeseen changes in resource conditions during the life of the GMP, the park would consider additional restoration actions at that time, including those identified in alternative 2.

ALTERNATIVES – SAN FRANCISCO

Proposed Boundary Modifications

CONCERN STATEMENT: The SFPUC has expressed an interest in the County of San Francisco jail property because it is within the hydrologic boundary of the Peninsula watershed. SFPUC noted that San Francisco code for surplus property declares the city department would be offered the property before the National Park Service.

RESPONSE

We acknowledge SFPUC expression of interest in the property and agree that it would make sense to manage this area as part of the Peninsula watershed because it is within the hydrologic boundary of the SFPUC-managed Peninsula watershed. The language in the GMP "Boundary Adjustment" section states that this would be considered "should the county government declare the property excess," assuming that an internal county process would be completed before this property would be identified as excess for NPS consideration. If included as part of the Peninsula watershed, it may still make sense to include it within the GGNRA boundary consistent with the majority of the watershed, and for the reasons identified in the rationale for the proposed boundary change. In the event that the SFPUC would not be interested in acquiring this property in the future and it becomes excess to San Francisco, or to facilitate future cooperative management, this potential boundary adjustment will remain identified at this time.

Access to Infrastructure at Lands End and Fort Funston

CONCERN STATEMENT: SFPUC requested that the alternatives be modified to ensure that they will have continued access to existing infrastructure in the Lands End area.

CONCERN STATEMENT:: SFPUC stated that the Draft GMP should include descriptions of the two wastewater treatment assets at Fort Funston that the SFPUC owns and that the maintenance and operation of the facilities should be part of the proposed alternatives.

RESPONSE

As noted in the "Background" section, under "Special Mandates and Administrative Commitments Related to the Golden Gate National Recreation Area," under the heading "Other Easements," numerous publicly and privately held rights, including easements for access and utilities, exist within the park's boundary. The park will continue to cooperate with easement holders to provide access; however, they are not individually described in the GMP.

Language has been added to the preferred alternative description to clarify San Francisco and Daly City stormwater and wastewater infrastructure easements.

The topic of easement rights for access, utilities, and other purposes is acknowledged in the "Other Easements" section of this plan; please reference it for further clarification.

Bolinas Lagoon Restoration

CONCERN STATEMENT: Commenters suggested that the GMP should identify the measures proposed to protect and restore coastal ecosystems and restore natural processes that affect Bolinas Lagoon.

RESPONSE

The Bolinas Lagoon Restoration Project—Recommendations for Restoration and Management (GFNMS 2008) identified key actions to protect and restore Bolinas Lagoon and its watershed. Three tables identify recommendations for restoration in the locally preferred plan, recommendations for management (best management practices), and recommendations for adaptive management and monitoring. Each action identifies the key land managers, including GGNRA, with a vested interest in implementation of each action. GGNRA involvement would be required to implement restoration actions in portions of the watershed, including improving floodplain function along Easkoot Creek, at the Bolinas Y, and along the east shore of Bolinas Lagoon (e.g., Stinson Gulch), and improving transitional habitat and habitat connectivity along the east shore of the lagoon.

Safety Concerns – Proposed Visitor Facilities at Montara Lighthouse and Shelldance Nursery Areas

CONCERN STATEMENT: Commenters questioned whether the Montara Lighthouse and Shelldance Nursery are appropriate sites for a potential visitor center or other visitor facilities, citing safety and traffic issues. One commenter requested that the National Park Service use the Sharp Park Clubhouse as the peninsula's primary gateway visitor center.

RESPONSE

The GMP preferred alternative concept includes improvements to safe access and egress to the Montara Lighthouse. This is important for current uses and in planning for a new multiagency visitor orientation facility in this location. Access improvements to the Shelldance Nursery site are also identified in the GMP preferred alternative concept for that site to accommodate the proposed visitor facilities, although a visitor center is not proposed for that location in the GMP. Some improvements may be developed as part of San Mateo County's planned Calera Parkway project. The description in alternative 1 has been clarified regarding safe access to this site. San Mateo County's "Traffic and Trails" study (2012) for the State Route 1 corridor between El Granada and Devil's Slide identified some potential actions to improve safety for people arriving by vehicle and other modes and reviewed the potential for a safe bicycle and pedestrian crossing at the site.

Sharp Park is not included in the GMP planning area. It is managed by San Francisco Recreation and Park Department and the commenter's suggestion to locate a visitor orientation facility at the Sharp Park Golf Course Clubhouse is outside the scope of the GMP.

ALTERNATIVES – SAN MATEO COUNTY

Proposed Trail and Trailhead Improvements

CONCERN STATEMENT: Commenters offered suggestions for which trails could be improved in San Mateo County, and how these improvements could be accomplished. Suggestions included adding signs on San Andreas Trail directing people to Sweeney Ridge, adding more loops to the trail system including longer loops to the coast, and connecting the San Andreas Trail to Sweeney Ridge.

CONCERN STATEMENT: San Mateo County Department of Public Works stated that there is a lack of detail regarding where proposed trailhead improvements would go, how many would be provided, and that trailhead improvements and better parking accommodations should be studied at the Fassler Trailhead.

RESPONSE

GGNRA is committed to providing an enduring system of sustainable trails. Goals and strategies for the trail system may be found in the "Elements Common to All Action Alternatives" section of the GMP. Several of the specific suggestions and questions noted by the commenters are part of alternative 1, the preferred alternative for park lands in San Mateo County.

Language has been added to text of alternative 1 for Sweeney Ridge to include improved trailhead facilities at Fassler Avenue.

Description of Proposed Trails in SFPUC Watershed

CONCERN STATEMENT: SFPUC requested a clearer description of the proposed trails in the SFPUC watershed. They expressed that there is no description of the restrictions in the scenic easement on trail access, yet alternatives mention providing such access. Further, the National Park Service should improve and provide better interpretation of existing connector trails from Sweeney Ridge to coastal areas in Pacifica. SFPUC asked that more analysis be done for existing conditions and the potential impacts to resources and if a new watershed trail is to be built, documentation of the effect to watershed resources must be analyzed.

RESPONSE

Alternative 1 has been revised to emphasize that any trails promoted by the National Park Service through watershed lands would be done in accordance with scenic and scenic and recreation easements, and with the 2002 *San Francisco Watershed Management Plan*.

Trail improvements suggested by SFPUC for other areas are included in alternative 1, either specifically, or more broadly with language such as "Trail connections to the community, Sweeney Ridge and adjacent public lands and the California Coastal Trail would be improved in partnership with other land managers" as is stated for Mori Point. Language has been added to alternative 1 for Sweeney Ridge to include trailhead improvements at Fassler Avenue as suggested by SFPUC and other commenters.

The reference to SFPUC parking resources in the affected environment section has been deleted. Other specific comments in the have been addressed through responses to a concern found within Response Topic 11:San Francisco Peninsula Watershed Lands, titled "Alternatives and Environmental Consequences."

PUC Support for Trail Proposals

CONCERN STATEMENT: SFPUC offered support for trail connections in alternatives 1 through 3, provided that trail proposals are consistent with the *Peninsula Watershed Management Plan*.

RESPONSE

Alternative 1 text has been changed to clarify that the National Park Service is offering support, cooperation, and collaboration to the trail proposals specifically identified in the *Peninsula Watershed Management Plan* and encouraging consideration of other trails that, though not specifically identified in the plan, seem consistent with the *Peninsula Watershed Management Plan* policies. These include to consider the addition of new trails and connectors in zones of low vulnerability and risk and to limit public trails to the periphery of the watershed in order to minimize adverse impacts (fire, the spread of exotic weed species, direct impacts to sensitive species, etc.) as noted in the SFPUC comment.

Correction of Trail Names in Document

CONCERN STATEMENT: San Mateo County Department of Public Works stated that the Draft GMP references the need for multiuse trail improvements connecting Sawyer Camp I Trail to Sneath Lane; however, the multiuse trail improvements would actually be connecting San Andreas Trail, the northern segment of Crystal Springs Trail, to Sneath Lane.

RESPONSE

Text in the alternative 1 description of Sweeney Ridge has been changed to reference San Andreas Trail, consistent with alternative 1 description for the SFPUC NPS easement description.

Primitive Camping and Potential Impacts

CONCERN STATEMENT: SFPUC stated that there is no explanation of "primitive camping" in the Draft GMP, which makes it difficult to adequately analyze potential impacts, and further that there is no analysis of potential fire hazard impacts associated with primitive camping within the Sweeney Ridge area. SFPUC suggests that prior to closing roads at the watershed, they should be evaluated for emergency access for firefighting equipment and personnel and to refer to the *Peninsula Watershed Management Plan* policies.

CONCERN STATEMENT: SFPUC suggested that more information is needed regarding the type of hikers' huts that are proposed for Sweeney Ridge under alternative 1 and that there could be a potential for fires or other impacts to watershed resources.

RESPONSE

"Primitive camping" and "hikers' hut" have both been added to the GMP glossary. Both are concepts that are described for potential future consideration. Implementation would depend on more detailed planning and environmental analysis that would need to confirm feasibility, define proposed locations and project details, and address concerns including fire. Consistent with our guiding principles and NPS policy, park staff would consult with adjacent land managers, including SFPUC, in development of proposals for lands adjacent to the Peninsula watershed. Neither the hikers' hut nor primitive camping concept assumes use of open or other fires.

The SFPUC *Peninsula Watershed Management Plan* includes mitigation measures that would be integrated into implementation of new trails and uses to reduce the risk of wildfire. These mitigations would apply to GMP-suggested trails and within the NPS easements. For NPS lands (not easements), the watershed management plan policies would not apply. However, the National Park Service acknowledges the importance of this habitat is in part related to the connectivity to Peninsula watershed lands.

The DGMP alternative 1 description for Rancho Corral de Tierra and other areas states that "unnecessary roads" or "unnecessary management roads" could be converted to trails or removed. As SFPUC suggests, prior to closing roads, determining whether they are necessary would include evaluation related to emergency access for firefighting equipment and personnel. Text throughout the alternative description has been changed to include "unnecessary" consistently in the document where it is not specified.

Reference to SFPUC watershed access has been deleted from the significance description for the proposed boundary adjustment for the Gregerson property.

NIKE Facilities on Sweeney Ridge

CONCERN STATEMENT: Commenters suggested removing the NIKE facilities on Sweeney Ridge.

RESPONSE

Future actions for the Nike Missile Launch Site at Sweeney Ridge might include removal of the buildings or retaining the shell of the buildings so visitors can understand the historic context of the site. Under either preservation treatment, the site's history could be interpreted.

Devil's Slide as Sensitive Resources Zone

CONCERN STATEMENT: The U.S. Fish and Wildlife Service supports zoning the Devil's Slide area west of State Route 1 as a sensitive resources zone as identified in alternative 2. Similarly, NOAA noted that the goals for natural resources are different between alternative 1 (the preferred alternative) and alternative 2, and suggests that limiting access will help to maintain the current diversity of the common murre and Brandt's cormorant colonies on Devil's Slide Rock.

RESPONSE

The preferred alternative identifies that if acquired, this area would be managed to protect nesting seabirds and historic sites and then notes the importance of collaboration with adjacent land managers. The existing natural zone would provide for this level of protection. The coastal bluffs west of State Route 1 and the nearshore area, if acquired, would be zoned sensitive zone. This would be consistent with the nearshore area of Fitzgerald Marine Reserve and would provide an increased level of protection for nesting seabird colonies on Devil's Slide Rock and the adjacent mainland.

Improving Recreational Opportunities

CONCERN STATEMENT: Commenters provided suggestions for improving recreational opportunities in San Mateo County, such as trail and parking improvements, directional signage, interpretive displays, open access to the Peninsula watershed at Montara Mountain, and continuing existing uses on new park lands.

RESPONSE

The goals for the preferred alternative for San Mateo County include focusing on the importance of providing access and engaging the community in the newest park lands. Key improvements would include a sustainable system of trails that will connect with local communities and contribute to an exceptional regional trail network. In addition, the need for more directional signs and trailhead parking throughout these areas was also emphasized. These goals would allow for consideration of many of the specific ideas provided by commenters. Detailing specific trails and related parking improvements in all areas of the park is outside the scope of this plan. Regarding continuing existing uses on newly acquired park lands, these uses would be allowed as long as they are consistent with NPS law and policy.

ALTERNATIVES – NEW ELEMENTS OF THE ALTERNATIVES

Climate Change

CONCERN STATEMENT: NOAA made suggestions to address and clarify information related to climate change.

RESPONSE

NOAA provided constructive suggestions to clarify NPS policy on climate change, park

goals for CO2 reduction, and the strategy for including climate change-related mitigation measures during implementation of the preferred alternative. Many of these changes have been made in the final GMP/EIS.

In evaluating NOAA's comments, the park re-examined the analysis of projected CO2 emissions and carbon footprint impacts completed in 2009. In doing so, the park noticed that a description of carbon footprint impacts for the full preferred alternative (alternative 1 for Marin, San Francisco, and San Mateo Counties; including alternative 3 for Alcatraz and Muir Woods) had not been included in the draft plan. A description of CO2 emissions for the preferred alternative is now included. The impact analysis concludes that the preferred alternative would result in a decrease in total emissions of 1% from the no action alternative. This would result in long-term, minor, beneficial impacts on the NPS carbon footprint.

New Alternative Suggestions (Alternatives, New Elements of Alternatives)

CONCERN STATEMENT: Commenters offered several new elements to the alternatives. New elements included installing public art in GGNRA, monitoring and managing invasive species (not only nonnative species), establishing an interpretive center at Sanchez Adobe, developing parking and signage for the Fassler Trail, and that the Lower Redwood Creek site could offer opportunities for program development collaboration between the GGNRA park partners and state parks.

RESPONSE

Although the GMP does not specifically identify installations of public art in GGNRA, GGNRA partners with Headlands Center for the Arts on art related projects. Currently and in the past the National Park Service has exhibited public art projects on GGNRA lands and anticipates continuing to do so in the future. The National Park Service recognizes art as a way to engage new audiences and offer fresh perspectives on park experience as addressed in *A Call to Action* document, which GGNRA has embraced.

For monitoring and managing invasive species, the park currently conducts actions to manage native pest species such as raccoons and ravens such as by preventing access to human food sources. Current management also addresses preventing introduction and spread of invasive species. Language has been added to text of alternative 1 for Sweeney Ridge to include improved trailhead facilities at Fassler Avenue.

Program development and collaboration between the GGNRA park partners and state parks at Lower Redwood Creek is consistent with GGNRA's "Guiding Principles for Park Management," found in the "Background" section of the GMP. Partnerships will continue to be an important way to accomplish the park's mission and build a community of stewardship. Comments on the use of Sanchez Adobe as a visitor center have been responded to elsewhere.

Alternatives – Preferred Alternative (General)

Suggested Elements for Alternatives

CONCERN STATEMENT: Commenters had several suggestions regarding alternative 1, including: limited public access areas and facilities should be preserved to allow park partners to conduct their work; the plan should directly reflect the intended recreation that was envisioned in the enabling legislation; alternative 1 does not create a greater "connection" with the park than the other alternatives; and that recreation, the health and well-being of people, and the impact on local communities are topics that are not identified as goals within alternative 1.

RESPONSE

Regarding the comment that the goals do not include the concepts of recreation and health and well-being, several aspects of alternative 1's concept description and goals embrace these ideas. The concept description includes a statement that "park management would focus on ways to attract and welcome people, connect with park resources, and promote enjoyment, understanding, preservation and health - all ways to reinvigorate the human spirit." Also, several goal statements relate to the concepts of encouraging a wide range of visitor opportunities in a diversity of settings that meet the interests of visitors. Regarding the comment on preserving access for park partners, the plan includes a guiding principle on continuing the legacy of park partnerships, along with guidance working with partners in the common to all action alternatives. Regarding the concern about the naming of alternative 1 as "Connecting People to Parks" and the application of this alternative to Alcatraz Island, it's important to clarify that alternative 3, "Focusing on National Treasures," is the preferred alternative for Alcatraz. The commenters' suggestions for Alcatraz Island (e.g., GGNRA should include opportunities to appreciate the major values of the island, adequate signage and other interpretative information, and a diversity of attractive features that showcase the island's natural, historic, and ethnographic values) are all consistent with the concept and goals of the preferred alternative. Regarding the comment that different zones should be developed for each alternative concept, the process used during the GGNRA GMP is consistent with NPS planning standards. The management zone descriptions represent the reasonable range of desired conditions that are consistent with the park's purpose and significance. The management zones are then applied to the park in different ways to reflect the concept of each alternative.

RESPONSE TOPIC 14: THE AFFECTED ENVIRONMENT

Critical Habitat for Plovers

CONCERN STATEMENT: One commenter requested that the GMP clarify that there is no critical habitat for plovers in the recreation area, pointing to a specific passage of text.

RESPONSE

The comment references a statement from the GGNRA *Draft Dog Management Plan Environmental Impact Statement,* not the *Draft General Management Plan Environmental Impact Statement.* While designated critical habitat has not been identified by the U.S. Fish and Wildlife Service within the park boundaries, effective habitat for the western snowy plover does exist in the park and presence of the plover has been documented in various areas (see "Affected Environment"). Furthermore, the *Recovery Plan for the Pacific Coast Population of the Western Snowy Plover*, developed by the USFWS in 2007, indicates that monitoring and management of western snowy plover breeding, wintering, and migrating habitat (including reducing disturbance to this species) continue to be important steps for this species' recovery. The Endangered Species Act obligates the National Park Service to manage for this listed species accordingly.

Incorporation of the SFPUC Watershed Plan

CONCERN STATEMENT: SFPUC suggested that including the SFPUC watershed management plan with other plans such as adjacent cities' general plans, bicycle plans, etc., diminishes the importance of the SFPUC plan and disregards the fact that the SFPUC plan governs administration of the Peninsula watershed with SFPUC as the fee owner, much like the more detailed description of

the Presidio management plan. SFPUC suggested more detail should be provided regarding the SFPUC *Peninsula Watershed Management Plan*, and how it would relate to the GMP. SFPUC stated that the relationship between GGNRA and SFPUC is not well defined within the Draft GMP and SFPUC is not mentioned as a participant in shared facilities.

RESPONSE

Text has been added to sections of the document to clarify the relationship between the National Park Service and SFPUC, to expand the description of the watershed management plan, and clarify the distinction between NPS-managed park lands and Peninsula watershed lands on which the National Park Service administers easements.

National Register of Historic Places Listing

CONCERN STATEMENT: SFPUC stated opposition to designating Mile Rock Tunnel as eligible for listing on the National Register of Historic Places because it is not visible or accessible to the public and therefore has little, if any, value as a historic place. Additionally, they stated that structural alterations have probably compromised the historical integrity. SFPUC requested that an assessment be done by qualified experts before it be designated in the national register.

RESPONSE

While important, public accessibility is not a factor for evaluating a property for eligibility to be listed in the National Register of Historic Places. If improvements are proposed for Mile Rock Tunnel, the park will work in collaboration with the SFPUC to ensure that appropriate treatment decisions are made. Also, the document has been corrected to remove Mile Rock Tunnel from the list of "eligible" sites in San Mateo County, instead placing it in the list of "potentially eligible" sites. At the time of this document printing, a formal determination of eligibility for listing in the National Register of Historic Places has not yet been done for Mile Rock Tunnel.

Management of Cultural Resources

CONCERN STATEMENT: The Presidio Trust stated that the discussion on cultural resources regarding the museum management division overstates the resources that are overseen by the division, because cultural resources within the Presidio are managed by Presidio Trust staff. Further, the GMP should also disclose that the Crissy Field Ohlone district is not under the exclusive management jurisdiction of the National Park Service, as one of the two precontact archeological sites within the district is on land managed by the Presidio Trust. The Presidio Trust suggests that in order to avoid confusion and to be consistent with NEPA and Advisory Council on Historic Preservation guidance, it would be preferable if the GMP only address those resources in the relevant planning area and APE.

RESPONSE

The area of potential effect table in the GMP is meant to give the reader the context for the entire park, and the Presidio of San Francisco is listed as a historic property within the park boundary. The GMP clearly states that the area of potential effect encompasses both those areas where proposed actions might occur that would directly impact cultural resources, as well as adjacent areas that contain resources that might be indirectly affected.

The park manages a significant number of museum collections that were transferred from the U.S. Army, which include materials that have a Presidio of San Francisco theme. These materials, associated with the Presidio and the park's other six forts are managed for their bearing on military history in the area.

Information Concerning Birds

CONCERN STATEMENT: U.S. Fish and Wildlife Service and NOAA stated that information about the birds using Bird Rock (Marin County), Devil's Slide, and San Pedro Rock should be added into the Draft GMP for a more comprehensive report.

RESPONSE

Changes have been made to the affected environment and environmental consequences sections to address these comments.

Fundamental Resources and Values

CONCERN STATEMENT: NOAA recommended including additional language in the foundation statement for Alcatraz Island to acknowledge the current NPS management of the island for natural resources.

RESPONSE

The fundamental resources and values are those that directly contribute to the significance for which the park was established. Alcatraz Island is designated a national historic landmark for its significance as the site of pre-Civil War fortifications, the nation's first military prison, the maximum security prison, and the American Indian occupation. The island's highly significant natural resources are included under the Coastal Corridor foundation statement within the "Background" section of the GMP. The Coastal Corridor statement is general in nature because the park's enabling legislation does not mention specific natural resources and the Alcatraz waterbird colonies were not present when the park was established.

San Francisco Veterans Administration Medical Center

CONCERN STATEMENT: Protection of east and west Fort Miley is important and its description should be amplified in the GMP.

CONCERN STATEMENT: Commenters suggested that Fort Miley is an ideal location to interpret the origins of the park.

RESPONSE

Fort Miley was a part of the defense system of the strategic harbor of San Francisco. Today, the fort is managed in three parts: east and west Fort Miley are managed by the National Park Service, and a 29-acre site in between is the San Francisco Veteran's Administration (VA) Medical Center. Text for east Fort Miley has been clarified to better address the history and potential public uses of the site. The National Park Service will continue to collaborate with the VA on the interface between park and VA lands, and to promote compatible development and use on the VA campus, and this has also been noted in the GMP preferred alternative.

Clarification of Terms for Basins and Terrace Aquifers

CONCERN STATEMENT: SFPUC stated that the discussion on San Mateo County groundwater does not differentiate between Santa Clara valley basin and small coastal terrace aquifers, where most park units drain to, nor does it acknowledge the southern westside basin and differentiate between it and the Santa Clara Valley basin.

RESPONSE

Text in "Affected Environment" has been be revised to address this comment.

RESPONSE TOPIC 15: POTENTIAL ENVIRONMENTAL CONSEQUENCES – CUMULATIVE IMPACT ANALYSIS

Discussion on Impacts on Birds

CONCERN STATEMENT: One commenter felt that more discussion should be provided for cumulative impacts on birds, including the impact of the common raven and how the enhancement of visitor experiences could negatively impact birds.

RESPONSE

The National Park Service and U.S. Geological Survey observations and video monitoring of black-crowned night-heron nests indicate that their eggs and chicks are a primary food source for common ravens on Alcatraz Island. The presence of ravens may be more directly related to the presence of waterbird nesting colonies than to the high numbers of visitors on the island. The park maintains a depredation permit for common ravens from the U.S. Fish and Wildlife Service and would continue to manage common ravens under all alternatives. In addition, food service and picnicking, if implemented, would be highly managed under all alternatives, with refuse collection and removal from the island occurring daily. The park would also continue to monitor for nonnative pest species on the island to prevent their introduction and establishment. Human disturbance may also result in increased nest predation by ravens. The park would continue to manage visitation and park operations to minimize disturbance to nesting birds. The park would continue to protect nesting waterbirds through seasonal closure of breeding areas, a waterbird docent program, and outreach to user groups (e.g., boaters) that are a source of disturbance to nesting birds. We would continue monitoring waterbirds and trying to reduce sources of disturbance. In addition, the 300-foot seasonal marine buffer surrounding the island would benefit the birds by reducing disturbance from marine vessels.

The impact assessment in several places discusses increased disturbance to nesting birds based on the preferred alternative. Overall, the impacts to waterbirds from this alternative were determined to be adverse and moderate.

Text has been added to the "Potential Environmental Consequences" section for alternative 3, the NPS preferred alternative for Alcatraz Island, to clarify that the park would continue to monitor and manage common ravens and nonnative pest species on the Island. In addition, visitation and park operations would continue to be managed to minimize disturbance. The "Implementation Planning" section of the GMP describes the subsequent studies, planning, and compliance that would be conducted prior to implementation of specific actions in the plan. These include fulfilling the requirements of the National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies.

Cumulative Impact Analysis

CONCERN STATEMENT: The Presidio Trust stated that the National Park Service did not coordinate with other organizations, such as the Presidio Trust, when determining actions that could have cumulative impacts. They also suggested projects that should be considered in the cumulative impact analysis such as the *Presidio Trust Management Plan* (PTMP), the Main Post update to the PTMP, the Presidio vegetation management plan, the Presidio trails and bikeway plan, the Tennessee Hollow watershed restoration, the restoration of Quartermaster Reach, and the rehabilitation of Presidio buildings.

RESPONSE

Various plans and projects related to the Presidio Trust have been noted as examples in the section on cumulative impacts. The conclusions of the analysis have not changed.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – GENERAL METHODOLOGY

Localized Impacts

CONCERN STATEMENT: One commenter requested that the National Park Service give more consideration to "localized" impacts, stating that these impacts can create significant cumulative impacts. The commenter also questioned the cumulative impact analysis considerations and determinations.

RESPONSE

As discussed in the "Methodology" subsection of the "Cumulative Impact Analysis" section, cumulative impacts are the collective effect that results from incremental impacts of the proposed action (GMP) when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. The methodology description goes on to say that the discussion of cumulative impacts is not required to provide as much detail as the discussion of the project's individual impacts, or the effects attributable to the GMP alone. At a general level, the discussion on cumulative impacts to habitat describes the combined potential effects of implementing the GMP and the many other plans and projects in the region (as described in appendix B). Considering that the GMP has a broad scope and is a conceptual programmatic planning document, this level of analysis is sufficient. Future site-specific implementation plans and actions would provide further, more detailed analysis of effects, both cumulative and individual.

The commenter also asserts that a localized adverse effect to particular bird species on GGNRA lands could have substantial broader effects because the major part of the world's population of some species may be in the San Francisco Bay area at a given time (e.g., migrating or wintering). The National Park Service acknowledges that various natural features of GGNRA provide and contribute high-quality San Francisco Bay habitat for a wide variety of species. However, in the regional context of the San Francisco Bay and beyond, GGNRA lands only comprise a small fraction of the overall San Francisco Bay avian habitat. And similarly, bird species (resident or migratory) do not solely concentrate on GGNRA lands, but instead occupy many habitat areas throughout the bay region. Thus, localized effects on GGNRA lands would probably not substantially affect global populations of species that rely heavily on San Francisco Bay habitat during particular times of the year.

Lastly, the commenter concludes by implying that the cumulative effect on avian species from the proposed GMP actions and other plans and projects in the region would be major and adverse. Considering the above regional context, the definition of cumulative impacts, and the fact that many of the external plans and projects in the region yield beneficial effects (e.g., habitat restoration plans), the National Park Service concludes that the collective cumulative effect on avian species would probably not be major and adverse, as per the definitions outlined in the GMP/EIS. However, to help clarify the NPS determinations for cumulative effects on birds from the proposed GMP actions and other plans and projects, the cumulative impact analysis section on habitat and special status species has been modified.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – PARKWIDE

Impacts to California Red-Legged Frog

CONCERN STATEMENT: SFPUC suggested that the conclusion of the no-action alternative should be compared with the impacts to the California red-legged frog from the other proposed alternatives.

RESPONSE

As stated in NPS Director's Order 12, "the no-action alternative should be described first as all other alternatives are then compared against changes in the environment from conditions described under the no-action alternative projected into the future" (DO 12 handbook, page 50).

Because the impacts of the no-action alternative serve as the baseline for all alternatives, the impacts of the action alternatives are compared to the impacts of the no-action alternative in order to clearly understand and present the context, duration, and intensity of the new (proposed) impacts. Following the guidance from Director's Order 12, all action alternatives in the Draft GMP are compared against the no-action alternative, including the impacts to the California red-legged frog. These impact analyses for all alternatives can be found in the "Potential Environmental Consequences" section (in the "Natural Resources–Biological Resources" subsection).

NEPA for Future Project Implementation

CONCERN STATEMENT: One commenter requested that project-specific National Environmental Policy Act compliance be conducted for the projects suggested in the Draft GMP.

RESPONSE

The "Implementation Planning" section of the GMP describes the subsequent studies, planning and compliance that would be conducted prior to implementation of specific actions in the plan. These include fulfilling the requirements of the National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies. Other comment responses also address environmental analysis and compliance that would be part of implementation planning for actions in the GMP.

Threatened and Endangered Species Information

CONCERN STATEMENT: One commenter requested additional information for various species throughout the park including coho salmon and steelhead, red-legged frog, northern spotted owl, mission blue butterfly, and the tidewater goby. They also requested that more information be provided on restoration and mitigation measures, migratory birds, and other bird species that use the recreation area for nesting, foraging, and migratory refueling.

RESPONSE

Considering that the GMP/EIS is a long-range programmatic document and that further threatened and endangered species impact analysis would be done on the subsequent implementation plans/projects, the GMP/EIS includes the appropriate level of detail for impact analysis. Furthermore, all of the management zones in the GMP provide for protection of threatened and endangered species. Mitigation measures for natural resources and threatened and endangered species are identified in the section "Implementation Planning and Mitigation Measures," including best management practices and conservation measures. More detailed conservation measures would be developed in consultation with the U.S. Fish and Wildlife Service and NOAA-National Marine Fisheries Service during implementation planning for actions in the GMP.

The park received comments on the topic of a lack of evaluation of impacts on habitats and non-threatened and endangered species, including migratory birds that may be declining. The "Affected Environment Section" of the environmental impact statement describes the diversity of habitats and migratory birds found within the park.

The "Potential Environmental Consequences" section of the document addresses potential impacts of the alternatives to these habitats and associated wildlife in the section entitled "Natural Resources – Biological Resources," subsection "Habitat (Vegetation and Wildlife)." As noted above, because of the programmatic nature of the GMP and EIS, analysis of potential impacts is also at a programmatic level. Mitigation measures for natural resources are identified in the section "Implementation Planning and Mitigation Measures" including best management practices. More detailed environmental analysis and mitigation measures (and associated environmental compliance such as NEPA and/or CEQA) would be developed during implementation planning for actions in the GMP.

Adequacy of Analysis

CONCERN STATEMENT: Commenters questioned the impact analysis for vegetation and wildlife habitat parkwide, stating that there is no evidence that current recreational use would impact habitat integrity and that areas where new trails should be created should clarify the impacts. Furthermore, commenters suggested that the analysis of all the alternatives should be redone, with unsubstantiated claims about the impacts of recreational use removed from consideration.

CONCERN STATEMENT: One commenter stated that the Draft GMP inadequately describes the no-action alternative, and therefore the Draft GMP is unfairly biased against the no-action alternative.

CONCERN STATEMENT: Commenters stated that the GMP should be based on sound, peer-reviewed science, long-term monitoring, and site-specific evidence. Some felt that the analysis in the Draft GMP currently did not rely on scientific evidence and was speculative. Most of these concerns relate to dog use and the impacts of recreation.

RESPONSE

The analysis of impacts to park resources from the no-action alternatives and three action alternatives is based on the professional judgment of park staff, NPS planners, and other subject matter experts. The GMP is a broad programmatic document and precedes more detailed implementation planning. The impact analysis in the GMP is intentionally conducted at a broad, regional level. The subsequent implementation plans will focus on more site-specific uses, trends, and effects. In addition, the associated environmental compliance (e.g., NEPA and CEQA) for these plans will assess implementation alternatives, resources, and impacts at a more site-specific and resource-specific level than the GMP.

Additional data may help to refine the conclusions in the environmental impact statement and reduce uncertainty regarding the level of impact on the human environment; however, all NEPA analysis is based on a prediction of potential future conditions and, as such, is always uncertain. In lieu of site-specific data, research methods generally accepted in the scientific community and best professional judgment have been used to draw conclusions regarding expected impacts to resources, consistent with CEQA and DOI require-ments. The data currently available provide sufficient information to allow the decision maker to make a reasoned choice among alternatives.

Commenters' suggestion that NPS managers provide an unassailable level of scientific evidence regarding the presence or absence of impacts would both prevent the consideration of new uses and the reasonable regulation of current uses. NPS *Management Policies 2006* makes clear that determinations on use should err on the side of conservation, may be based on best professional judgment, and when practicable, on the results of study or research. In this way, the National Park Service is able to make informed decisions regarding park uses that meet the NPS mandate to "conserve the scenery and the

natural and historic objects 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" (16 USC 1).

Impact Analysis for Special-Status Species

CONCERN STATEMENT: Commenters questioned the impact analysis for special-status species parkwide. Questions included a lack of evidence for the Endangered Species Act finding for the snowy plover under the no-action alternative, inconsistency of the impacts to the snowy plover across alternatives, and a suggestion that the discussion of the San Francisco garter snake should include impacts from new recreational development. SFPUC stated that the ESA determinations for alternatives 1, 2, and 3 are not complete and should include a statement of effect. SFPUC also felt that the analysis should include the impacts to marbled murrelets.

RESPONSE

The GMP is a programmatic document that aims to provide broad guidance on future management of the park. The potential site-specific and species-specific impacts to threatened and endangered species resulting from proposed facility improvements, construction, and other management actions would be further analyzed and determined during project proposal and review processes for these subsequent implementation plans and projects. Rather than providing this level of detail and analysis in the GMP/EIS, these implementation plan review processes will include all applicable environmental compliance through NEPA, CEQA, and ESA.

The NPS analyses and impact determinations in this GMP/EIS for potential effects on species listed under the ESA are based on input from subject matter experts and resource planners at the park (see "Natural Resources" section of the "Environmental Consequences" chapter). The scope and detail of these sections of the GMP/EIS are consistent with the conceptual nature of this long-term programmatic planning document and the fact that more site-specific or project-specific ESA compliance would be conducted in the future during implementation plan review and approval. The analyses and determinations have also been formatted in a way that is adequate to facilitate the ESA Section 7 compliance with the U.S. Fish and Wildlife Service.

These analyses and determinations have been submitted to the USFWS for review to fulfill ESA consultation and compliance requirements. The National Park Service is committed to addressing any forthcoming concerns or comments regarding the content, detail, or accuracy of the analyses and determinations raised by the USFWS during their review. This is required to meet the ESA compliance needs.

Furthermore, with any new facility, including new or improved trails, the National Park Service strives to avoid endangered species habitat as much as possible in design. For example, trail work occurring near marbled murrelet habitat could occur during non-breeding season when murrelets are at sea rather than in the conifer forests. This strategy would be similar to those implemented for spotted owls. The section "Implementation Planning and Mitigation Measures" of the GMP addresses avoidance of impacts and use of conservation measures taken in consultation with the appropriate resource agencies, for both operations and for new facilities and management actions.

Analysis of Human Health and Safety Impacts

CONCERN STATEMENT: One commenter stated that the GMP should include an analysis of the human health impacts of all alternatives. The commenter further stated that a more adequate analysis is needed

regarding how crime could increase if fewer people are allowed in certain areas.

CONCERN STATEMENT: One commenter stated that the analysis of public safety in the San Francisco park units is not adequately addressed in the Draft GMP. They suggested that a reduction in use of these park units could result in an increase in crime.

RESPONSE

The concerns raised by the commenters center around implementation of the draft dog management plan / environmental impact statement, particularly the restrictions that could be imposed on dog walking in certain parts of the park. One commenter's assertion that restrictions on dog walking will prevent many people from enjoying or exercising in the park, and lead to increased crime because of reduced visitation, and adverse impacts on human health, has no basis in the GMP. The GMP describes a very wide range of recreational activities that are available to visitors in all management zones and does not describe any limitations or prohibitions on dog walking, which is the exclusive province of the dog management plan.

Notwithstanding, the descriptions of recreational activities permitted in the management zones have been clarified to explicitly include certain popular activities, like running, that some commenters noticed were omitted in the draft.

In addition, the dismissal of public health and safety as an impact topic has been reviewed and validated. The impacts to visitor safety are adequately evaluated under the heading of "Visitor Use and Experience." Park use is not expected to decrease as a result of the plan, so there would be no measurable effect on safety or the feeling of safety associated by some visitors with higher visitor use areas. The National Park Service protects human health by managing pests, pesticides, exotic species, diseases (under advice from the Centers for Disease Control), air quality, and in the offerings of its concessioners. These are addressed in other management plans, with little reference in the GMP.

Impacts of New Visitor Activities

CONCERN STATEMENT: SFPUC stated that the Draft GMP does not adequately address the impacts of new visitor activities, such as the addition of new trails. The concern specifically pointed to increased impacts at Rancho Corral de Tierra and within the SFPUC watershed. They also state that the potential for fire danger and existing conditions in the SFPUC watershed are not adequately addressed.

RESPONSE

Existing trails and facilities at Rancho Corral de Tierra have been enjoyed by the public prior to NPS management, including on the two existing county trails through the portion of Rancho north of Montara that connects to McNee Ranch State Park (Farallone Cutoff Trail and Old Pedro Mountain Road). Owners of the more than 200 horses boarded at 4 facilities on the Rancho property, since prior to both Peninsula Open Space Trust (POST) and NPS management, have had the use of trails throughout the property. Because of the challenging terrain and the relatively remote location of Rancho Corral de Tierra, visitation at this site is not anticipated to substantially increase. The concern of fire management is addressed in the response to a concern found in Response Topic 15: Potential Environmental Consequences, Potential Environmental Consequences – San Mateo County, titled "Fire Management and Fuels Reduction." Proposals for Peninsula watershed lands have been clarified in Response Topic 12. Please reference these responses for further details on these topics.

Removal of Vegetation

CONCERN STATEMENT: Commenters expressed concern about removal of

vegetation in the park, including removal of exotic species. Commenters noted that removal of exotic species could impact scenic, cultural, recreational, wildlife, and climate change values.

RESPONSE

Both the NPS *Management Policies 2006* and Executive Order 13112 (1999) direct the National Park Service to remove exotic plant species. NPS policy describes a number of situations where exotic plant species should be managed up to and including eradication. These include when exotic species interfere with natural processes, native species and/or native habitats, or when exotic species damage cultural resources or landscapes. When these or other conditions described in NPS *Management Policies 2006* are not met or when exotic plant species are considered part of a cultural landscape or resource, they are not removed. Impacts to scenic, recreational, climate change, and other values are considered when prioritizing different areas and species for exotic plant removal.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – ALCATRAZ ISLAND

Concerns of Increased Access

CONCERN STATEMENT: Commenters expressed concerns regarding access to Alcatraz Island, including the potential impacts of increased public access on sensitive habitat, and ensuring that the U.S. Coast Guard access to this site would remain.

CONCERN STATEMENT: The U.S. Coast Guard stated concern related to the expansion of restricted access around places such as Alcatraz Island. They asked whether the National Park Service would be requesting Coast Guard assistance in enforcing these zones.

RESPONSE

The management zoning and descriptions of the alternatives in the GMP acknowledge the potential for conflict between public access and adjacent sensitive habitats throughout the park, and were developed in a manner that provides for abundant public access while also protecting sensitive habitats.

U.S. Coast Guard boats and personnel would continue to have access to restricted areas within GGNRA in the performance of their duties. GGNRA does not anticipate any additional needs for Coast Guard enforcement.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – MARIN COUNTY

Impact Analysis Concerns

CONCERN STATEMENT: One commenter raised questions about the impact analysis on vegetation and wildlife habitat in Marin County for alternative 1, which is the preferred alternative for Marin County. Concerns included not enough information about how the preferred alternative would reduce habitat fragmentation and the potential for exotic species, how the preferred alternative would reduce erosion through a sustainable trail system, and how it would improve current impacts from recreational use, trampling of plants, spreading of exotic species, and increased wildlife impacts.

RESPONSE

The National Park Service does not agree with commenter's conclusions that the information and analyses in the draft environmental impact statement are vague and insufficient to support the preferred alternative. While the management zones would allow for certain types of uses and development within them, the description of the alternatives limits the uses and development to restricted areas within the

zones. The draft environmental impact statement includes mitigation measures to protect resources. The "Implementation Planning" section commits the park to additional planning and environmental analysis before specific actions are implemented. Other specific comments provided the commenter about impact analysis have been addressed in other responses and through specific changes to the document.

Spotted Owl Management

CONCERN STATEMENT: One commenter suggested that an eradication program in Marin County should be implemented for the barred owl because it competes with the federally threatened northern spotted owl.

RESPONSE

Spotted and barred owl monitoring and management are part of the park's ongoing wildlife management program and are not specifically addressed in the GMP.

Recreational Development Impacts in Alternatives 1 and 2

CONCERN STATEMENT: One comment asked the National Park Service to clarify how recreational development impacts under alternative 2 in Marin County would be the same as alternative 1 if there is more development proposed under alternative 1.

RESPONSE

The analysis of impacts to habitat for vegetation and wildlife for alternative 1 and alternative 2 have been changed to document that alternative 2 has greater beneficial impacts than alternative 1.

Dune Restoration

CONCERN STATEMENT: One commenter suggested that the opening of a portion of the north parking lot at Stinson Beach has negatively impacted the dunes there and requests that access to these dunes be restricted and the dunes restored.

RESPONSE

The preferred alternative includes dune enhancement at Stinson Beach. Detailed site planning would occur in the future. The park may take more immediate actions as needed in the interim.

Bird Island (Bird rock)

CONCERN STATEMENT: One commenter noted that Bird Island (Bird Rock) should be evaluated under alternative 2.

RESPONSE

Bird Island is included in the sensitive resources zone in alternative 2. See the map of alternative 2 for Marin County. The text for alternative 2 "Nearshore Ocean and Bay Environments" has been modified to add reference to Bird Island.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – SAN FRANCISCO

Inadvertent Visitor Impacts

CONCERN STATEMENT: SFPUC stated concern that increased visitor use of Fort Funston could affect visitors to Lake Merced, located to the east of Fort Funston, across California State Route 35.

RESPONSE

The GMP concept for Fort Funston is not expected to increase the number of visitors at Fort Funston. The GMP preferred alternative description states that NPS management

would "continue to support current recreational activities." Only modest site improvements are proposed. No impacts to Lake Merced are likely from proposed management identified in the GMP. Text in this alternative has been modified to include cooperation with the City and County of San Francisco and Caltrans to encourage safety improvements to California State Route 35.

POTENTIAL ENVIRONMENTAL CONSEQUENCES – SAN MATEO COUNTY

Clarification of Proposed Recreational Development

CONCERN STATEMENT: SFPUC asked for clarification of the new recreational development proposed, because the maps do not include detail about trail locations. Without this information, they stated that the conclusion for impacts of new trails on threatened and endangered species, such as the California red-legged frog, which has an extensive habitat, could not be supported. Further, SFPUC expressed concern with the impact of trails on federally listed species in San Mateo County. They noted that the proposed trails would probably have adverse impacts similar to the Fifield Cahill Ridge Trail and should consider similar mitigations to those implemented for the Fifield Cahill Ridge Trail if these trails were to move forward. Other concerns included lack of detailed analysis on how the trails would affect the San Francisco garter snake and a lack of discussion for the marbled murrelet.

RESPONSE

The purpose of the GMP document is to provide broad guidance on future directions. Detailed analysis of impacts to threatened and endangered species, resulting from specific facility improvements or new facility construction, would be determined during project proposal and review processes (including the associated environmental compliance through NEPA and/or CEQA) rather than in this GMP document. The NPS analyses and impact determinations in this GMP/EIS for potential effects on species listed under the ESA are based on input from subject matter experts and resource staff at the park. The scope and detail of these sections of the GMP/EIS are consistent with the conceptual nature of this long-term programmatic planning document. The analyses and determinations have also been formatted in a way that is adequate to facilitate the ESA Section 7 compliance with the U.S. Fish and Wildlife Service. This document has been submitted to the USFWS for review to fulfill ESA consultation and compliance requirements. The National Park Service is committed to addressing any forthcoming concerns or comments regarding the content, detail, or accuracy of the analyses and determinations raised by the USFWS during their review. This is required to meet the ESA compliance needs.

Also, with any new facility, including new or improved trails, the National Park Service strives to avoid endangered species habitat as much as possible in design, and to minimize impacts during construction. For example, trail work occurring near marbled murrelet habitat could occur during non-breeding season when murrelets are at sea rather than in the conifer forests. This strategy would be similar to those implemented for spotted owls. The section "Implementation Planning and Mitigation Measures" of the GMP addresses avoidance of impacts and use of conservation measures taken in consultation with the appropriate resource agencies, for both operations and for new facilities and management actions.

Commenters were specifically concerned about some threatened and endangered species not being sufficiently included in this document. Marbled murrelets, California red-legged frogs and San Francisco garter snakes have been addressed in this document. While they may not be referred to by name in every instance, these species fall within the threatened and endangered

species and species of concern section within the section "Implementation Planning and Mitigation Measures." Potential impacts to threatened and endangered species, when unavoidable, are listed by species in the "Potential Environmental Consequences" section of this document. Please refer to these sections for more information.

Economic Analysis of Repairs to Existing Roads

CONCERN STATEMENT: SFPUC stated that the Draft GMP should include an economic analysis of the repair and rebuilding needed to the existing main road through McNee Ranch State Park.

RESPONSE

The text referred to in this comment is in the "Potential Future Boundary Adjustments" section of "Elements Common to All Action Alternatives" and addresses the significance criteria for inclusion of McNee Ranch State Park in the park's boundary. The text in this section states "this is not a proposal for acquisition," and it does not propose a specific trail or repair and rebuilding of any facilities in this park. Text has been modified to change "planned" to "potential" in reference to the east-west trail connection.

Traffic Analysis of Visitors in Remote Areas

CONCERN STATEMENT: SFPUC stated that the Draft GMP does not provide a meaningful traffic analysis of impacts caused by bringing new visitors to remote areas of the SFPUC watershed. Further, prior to closing any roads, they should be evaluated for emergency access for firefighting equipment and personnel. They also state that more information is needed as to the possible access routes and the purpose of the limited public vehicle access for Sweeney Ridge (under the preferred alternative).

RESPONSE

Limited vehicle access to Sweeney Ridge is currently accommodated over Sneath Lane by permit that takes into account safety and fire considerations. This special access is intended to accommodate organized groups and people with disabilities. According to our records, this road is owned in fee by the National Park Service, not SFPUC as stated in the comment.

The GMP preferred alternative suggests exploring a potential trail connection in the Peninsula watershed over an existing management road on Whiting Ridge. If pursued, this action would be an action of SFPUC potentially in cooperation with the National Park Service and other agencies. This proposal, if carried forward, would be subject to separate environmental review and analysis of all impacts, with detailed mitigation identified at that time. Because of the remote nature of the segment of trail referenced in the comment, and because it would be an extension of existing trails, accessed from trailheads near both State Route 1 and State Route 35/I-280, traffic associated with this new trail segment would be negligible.

Evaluation of unnecessary management roads is addressed in a concern found in Response Topic 13: The Alternatives, Alternatives –San Mateo County, titled "Primitive Camping and Potential Impacts." Please see the corresponding response for details on this topic.

Fire Management and Fuels Reduction

CONCERN STATEMENT: One commenter noted that additional discussion and analysis should be included in the Draft GMP for fire hazard management and fuels reduction.

RESPONSE

Fire suppression on all NPS-managed lands in San Mateo County is conducted by California Department of Forestry and Fire Protection (Cal Fire) under a Reciprocal Fire Protection Agreement. Under this agreement, fire hazard and risk mitigation at Sweeney Ridge and Rancho Corral de Tierra are addressed.

Fire management for NPS-managed lands, including Sweeney Ridge, is addressed in the GGNRA Fire Management Plan (FMP) / Environmental Impact Statement adopted in February 2006. The GGNRA FMP will be amended to include Rancho Corral de Tierra, which became part of GGNRA in December 2011. The FMP Amendment would not include the Gregerson property, owned by the Peninsula Open Space Trust. The FMP would be amended to include Gregerson at a later update, following a boundary change and acquisition, if approved and funded.

Although new or increased public uses have the potential to increase risk of wildfire during high fire hazard conditions, this risk can be addressed in several ways. The FMP is the document that addresses fire risk, prevention and management on NPS-managed lands, including:

- analysis of existing fire hazard conditions
- fuels management projects
- fire preparedness and suppression
- fire danger and visitor use restrictions (such as restricted activities or access on fire danger days)
- strategies to reduce risk and prevent wildfires, including maintenance activities such as mowing and vegetation management as well as monitoring, communications, and protocols (patrols and enforcement) during periods of high fire danger
- detailed mitigation measures for potential fire impacts, including current best practices
- a "Step-Up Plan" that provides more detailed protocols to address use restrictions during high fire danger periods

The concerns over increased or new use and any resulting fire risk potential have been heard. GGNRA-managed lands in San Mateo County referenced in the SFPUC letter, such as Sweeney Ridge and Rancho Corral de Tierra, would be managed in the future much like they are managed today, with few changes. These areas are expected to see only a modest increase in visitor use. Although Rancho Corral de Tierra came under NPS management in December 2011, it has a long history of public use and access with existing equestrian facilities for more than 200 horses and public use of the existing trail system prior to NPS management. NPS presence and management activities at Rancho Corral de Tierra, including strategies to eliminate illegal vehicle access and illegal campfires, would be expected to further reduce fire risk. New uses of concern to SFPUC, such as primitive camping or a hikers' hut at Rancho Corral de Tierra and Sweeney Ridge, are GMP concepts that would be explored cautiously and, if pursued, would require additional planning to define the program and facility details, validate the concepts, and identify compatible locations for such facilities. Factors such as wildfire risk would be addressed at that time and facilities would be located to maximize compatibility with adjacent lands and protect resources.

Limited public vehicle access at Sweeney Ridge is a long-standing practice that has permitted small organized group events and individuals by special request to have vehicle access over Sneath Lane to the ridge. Permission for such access also takes into account fire conditions and wildfire prevention.

Visitor use on additional trails within the Peninsula watershed, encouraged or promoted by the National Park Service, would be subject to the willingness of SFPUC as the land manager to consider, review, and

approve such proposals. Environmental review and detailed planning at that time would identify use restrictions and specific mitigation measures to address SFPUC fire management and other concerns. Related concerns and their corresponding responses can be found in two other locations: Response Topic 6: Transportation titled "Transportation on Sweeney Ridge" and Response Topic 13: Potential Environmental Consequences, Potential Environmental Consequences- San Mateo County, titled "Traffic Analysis of Visitors in Remote Areas."

Collaboration and communication are essential for fire management within GGNRA. The National Park Service will continue to communicate with Cal Fire, Coastside Fire Protection District, San Mateo Fire Safe Council, and local communities to understand, prioritize, and address fire management concerns related to our lands, in coordination with others in this area. NPS fire management staff will also continue to participate in fire management coordination meetings with SFPUC/Peninsula watershed staff, also attended by Cal Fire and representatives of the San Mateo Fire Safe Council and Midpeninsula Regional Open Space District.

AGENCIES, ORGANIZATIONS, AND INDIVIDUALS RECEIVING A COPY OF THIS DOCUMENT

A copy of this final general management plan / environmental impact statement has been provided to the following agencies and organizations.

ELECTED OFFICIALS AND COMMITTEES

- Office of Senator Barbara Boxer
- Office of Senator Dianne Feinstein
- Office of Representative Nancy Pelosi (12th Congressional District)
- Office of Representative Jackie Speier (14th Congressional District)
- Office of Representative Jared Huffman (2nd Congressional District)
- Office of California State Senator Mark Leno (11th District)
- Office of California State Senator Leland Y. Yee (8the District)
- Office of California State Senator Jerry Hill (13th District)
- Office of California State Senator Noreen Evans (2nd District)

FEDERAL AGENCIES

- Federal Emergency Management Agency, Region 9
- National Trust for Historic Preservation
- National Oceanic and Atmospheric Administration: National Marine Fisheries Service and the Gulf of the Farallones National Marine Sanctuary
- Presidio Trust
- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency: Region 9 and the Washington Office
- U.S. Fish and Wildlife Service, Sector 7
- U.S. Geological Survey

CALIFORNIA STATE AGENCIES

- California Coastal Commission
- California Coastal Conservancy
- California Department of Fish and Game
- California Department of Forestry
- California Department of Water Resources
- California Environmental Protection Agency
- California Native American Heritage Commission
- California State Clearinghouse
- California State Parks: Angel Island State Park, Mount Tamalpais State Park, and the Office of Historic Preservation
- State of California: Water Resources Control Board

REGIONAL AND LOCAL AGENCIES

- Bay Area Air Quality Management District
- Bolinas Public Utility District
- City and County of San Francisco
- East Bay Regional Park District

- Golden Gate Bridge Highway and Transportation District
- Marin County Parks and Recreation
- Marin County Community Development Agency
- Marin Municipal Water District – Sly Oaks Headquarters
- Midpeninsula Regional Open Space District
- Montara Sanitary District
- Muir Beach Community Services District
- San Francisco Bay Conservation and Development Commission
- San Francisco Bay Regional Water Quality Control Board
- San Francisco Parks and Recreation
- San Francisco Public Utilities Commission
- San Mateo County Resource Conservation District
- San Mateo County Parks
- San Mateo County Planning and Building Department
- San Mateo County Transit District
- Santa Clara County
- Sausalito/Marin City Sanitary District
- Stinson Beach County Water District
- Tamalpais Community Services District

CITIES

- City of Belmont
- City of Belvedere
- City of Burlingame
- City of Foster City
- City of Half Moon Bay
- City of Larkspur
- City of Mill Valley
- City of Millbrae
- City of Novato
- City of Pacifica
- City of San Bruno
- City and County of San Francisco
- City of San Rafael
- City of Sausalito
- City of South San Francisco
- Daly City
- Marin County Board of Supervisors
- San Francisco County Board of Supervisors
- San Mateo County Board of Supervisors

ORGANIZATIONS

- Bay Area Open Space Council
- California League of Conservation Voters
- California Native Plant Society
- Center for Biological Diversity
- City College of San Francisco
- Coleman Advocates for Youth
- Committee for Green Foothills
- Farallones Marine Sanctuary Association
- Golden Gate National Parks Conservancy
- Peninsula Open Space Trust
- San Mateo County Historical Association

AMERICAN INDIAN TRIBES AND ORGANIZATIONS

- Amah Mutsun Band of Ohlone Costanoan Indians
- Amah Mutsun Tribal Band

- California Native American Heritage Commission
- Costanoan Ohlone Rumsen-Mutsun Tribe
- Costanoan-Rumsen Carmel Tribe
- Federated Indians of Graton Rancheria
- Indian Canyon Mutsun Band of Costanoan
- Muwekma Ohlone Tribe
- Ohlone/Costanoan-Esselen Nation
- The Ohlone Indian Tribe
- Trina Marine Ruano Family
- and other American Indian representatives

INDIVIDUALS

There is an extensive list of individuals; these individuals will be notified of the availability of the plan.

PREPARERS AND CONSULTANTS

The GMP planning team included a steering committee made up of managers who guided the entire planning process. When developing and reviewing the issues and alternatives, the planning team included more than 50 managers and resource/technical specialists from the National Park Service and Golden Gate Parks Conservancy. In addition, the planning team included staff of the California State Parks, experts from academia, and members of consulting firms. Most of these planning team members also participated in various working groups that focused on individual issues and identified solutions that were incorporated into the GMP alternatives. Working groups were formed to address the following topics: Alcatraz Vision, Asset Management, Climate Change, Operational Facilities, Marine Resources, American Indians, Park Boundaries, Partnerships, Trails, and Transportation.

STEERING COMMITTEE

Brian Aviles, Senior Planner, Golden Gate National Recreation Area; 13 years with the National Park Service, 16 years academic and private practice; M.A. and B.A. in Landscape Architecture

Mai-Liis Bartling, Deputy Superintendent, Golden Gate National Recreation Area (retired)

Frank Dean, General Superintendent, Golden Gate National Recreation Area; 36 years with the National Park Service, Chief of the Centennial Coordination and Planning Office in Washington D.C., Superintendent of Saratoga National Historical Park, Executive Director of Erie Canalway National Heritage Corridor; Masters in Public Administration

Abby Sue Fisher, Chief of Cultural Resources, Golden Gate National Recreation Area; 20 years with the National Park Service; 7 years at Keweenaw National Historical Park; Ph.D. in Textiles and Clothing, M.A. in Anthropology and Latin American Studies, B.A. in Art History, Anthropology, and Home Economics

Michele Gee, Chief of Interpretation and Education, Golden Gate National Recreation Area; 1 year with the National Park Service, 11 years with Golden Gate National Parks Conservancy as Crissy Field Center Deputy Director; B.A. Environmental Studies

Daphne Hatch, Chief of Natural Resource Management and Science, Golden Gate National Recreation Area; 25 years with the National Park Service, 8 years as Natural Resource Specialist, Golden Gate National Recreation Area, 5 years seasonal on trail crew, in interpretation, and as naturalist; B.S. in Botany, M.S. in Range Management

Nancy Hornor, Chief of Planning and Compliance, Golden Gate National Recreation Area; 35 years with the National Park Service, 13 years as Environmental Specialist with Golden Gate National Recreation Area, 20 years as Park Planner with Golden Gate National Recreation Area; B.S. in Conservation of Natural Resource

Susan Hurst, Administrative Officer, Golden Gate National Recreation Area (retired)

Craig Kenkel, Superintendent, San Francisco Maritime National Historical Park; 29 years with the National Park Service, 1 year acting Deputy Superintendent at Golden Gate National Recreation Area, 4 years Chief of Cultural Resources at Golden Gate National Recreation Area, 9 years with the NPS Midwest Regional Office; B.A. in Architecture

Howard Levitt, Chief of Communications and Partnerships, Golden Gate National Recreation Area; 30 years with the National Park Service: 5 years as Outdoor Recreation Planner, 5 years as Management Assistant, 18 years as Chief of Interpretation and Education; B.A. in Political Science

Brian O'Neill, General Superintendent, Golden Gate National Recreation Area, 1986 – 2009 (deceased)

Chris Powell, Legislative Specialist, NPS Office of Legislative and Congressional Affairs; 20 years with the National Park Service, 17 years as Public Affairs Specialist; two B.A. Degrees, A.A. in Nursing

Aaron Roth, Deputy Superintendent, Golden Gate National Recreation Area; 8 years with the National Park Service: 3 years as Chief of Business Management, Golden Gate National Recreation Area, 6 months as Management Assistant, Grand Canyon National Park, 3 years as Business Management Specialist in the NPS Intermountain Regional Office; MBA in Entrepreneurship, B.S. in Systems Engineering

TEAM MEMBERS – CALIFORNIA

(In addition to the members of the GMP Steering Committee)

Cathie Barner, Director, Park Projects, Golden Gate National Parks Conservancy; 15 years with the Golden Gate National Parks Conservancy, M.A. in Architecture

Paul Batlan, Realty Specialist with Land Resource Division, NPS Washington Office; 12 years with the National Park Service, 11 years with Presidio Project Office and Fort Baker Team with Golden Gate National Recreation Area; B.A. and M.A. in Architecture, J.D. in Law

Kim Coast, acting Chief Park Ranger, Golden Gate National Recreation Area; 26 years with the National Park Service, Operations Branch Supervisor/ Visitor and Resource Protection Golden Gate National Recreation Area, 1 year with the U.S. Forest Service; B.A. in Recreational Resource Management, A. A. in Park and Grounds Maintenance Management, BLM Training Program

Martha Crusius, Chief of Planning and Compliance, Pacific West Region; 29 years with the National Park Service; B.A. in Biology, M.R.P. in Regional Planning, M.S. in Energy Management and Policy

Jay Eickenhorst, Partner Liaison; 35 years with the National Park Service, 25 years as NPS Park Ranger, 2 years as NPS Safety Officer, 2 years with U.S. Forest Service; B.S. in Marine Biology, A.A. and A.S. in Biology

Sharon Farrell, Associate Director Park Projects, Resource Conservation, and Project Implementation, Golden Gate National Parks Conservancy; 6 years with Golden Gate National Parks

Conservancy, 4 years as NPS Natural Resource Specialist, 7 years as NPS Plant Ecologist, 2 years as Natural Resources Planner with Presidio Trust; M.S. in Park Management and Recreation, B.S. in Chemistry

Carey Feierabend, Lead Project Manager, Golden Gate National Recreation Area; 16 years with the National Park Service, 4 years as Planning Manager with Presidio Trust, 5 years as Planner/Historic Architecture Consultant, Golden Gate National Recreation Area; M.A. and B.A. in Architecture

Darren Fong, Aquatic Ecologist, Golden Gate National Recreation Area; 18 years with the National Park Service; M.S. in Wildland Resource Science

Sue Fritzke, Deputy Superintendent, Rosie the Riveter WWII Home Front National Historical Park; 25 years with the National Park Service, 2 years with Peace Corps Ecuador; M.S. in Plant Ecology and Physical Geography, B.A. in Physical Geography and Environmental Studies,

Stephen Haller, Park Historian and Branch Chief for Cultural Resources, Golden Gate National Recreation Area; 37 years with the National Park Service, Ranger with Fort Point National Historic Site, San Francisco Maritime National Historical Park, and Golden Gate National Recreation Area; B.A. American History

Jim Kren, Historical Architect, Golden Gate National Recreation Area; 22 years with the National Park Service: 12 years with Golden Gate National Recreation Area, 4 years with Presidio Project Office, 4 years with NPS Denver Service Center; B.A. Environmental Design, B.A. in Architecture

Tom Lindberg, Superintendent Marin Sector California State Parks (retired)

Don Mannel, Chief of Maintenance, Golden Gate National Recreation Area

Bill Merkle, Supervisory Wildlife Ecologist, Golden Gate National Recreation Area; 9 years with the National Park Service, 15 years wildlife management and research experience; Ph.D. in Biology

Mia Monroe, Interpretive/Site Supervisor at Muir Woods, Golden Gate National Recreation Area; 36 years with the National Park Service

Yvette Ruan, Chief of Fire and Emergency Services, Golden Gate National Recreation Area; 30 years with the National Park Service: 8 Years as Chief Ranger, 7 years as Law Enforcement Ranger, 3 years as EEO Specialist; B.S Criminal Justice Administration

Michael Savidge, Director, Strategic Planning/Partnership Development, Golden Gate National Recreation Area; 23 years with the National Park Service, 6 years as Transition Manager for Presidio, 10 years with Department of Defense Armed Forces Recreation Center, Germany; Masters of Social Work in Community Administration, B.A. in Psychology, Fulbright Fellow Stockholm Sweden, Executive Development Programs with Department of Defense and Department of the Interior, Kennedy School of Government/Executive Public Policy

Jerry Scheumann, Maintenance Division Supervisor, Golden Gate National Recreation Area

Paul Scolari, Historian and American Indian Liaison, Golden Gate National Recreation Area; 18 years with the National Park Service; Ph.D in History of American Art and Architecture

Craig Scott, GIS Coordinator, Golden Gate National Recreation Area; 13 years with the National Park Service; B.A. in Geography

Emilyn Sheffield, Professor of Recreation and Parks Management, California State University, Chico; 26 years of applied research and consulting with government agencies, businesses, and nonprofit organizations; Ph.D. in Recreation and Parks Management

Ed Ueber, National Oceanic and Atmospheric Administration (retired)

Tamara Williams, Hydrologist/Physical Scientist, Golden Gate National Recreation Area; 15 years with the National Park Service; B.S. in Geology

TEAM MEMBERS – NPS DENVER SERVICE CENTER

Planning Team

Tracy Atkins, Project Manager; 4 years experience with the National Park Service, 22 years of industry experience in project management, construction management, planning and community outreach; M.S. in Civil Engineering, M.S. in Community and Regional Planning, B.S. in Architectural Engineering

Sarah Bodo, Community Planner; 5 years with the National Park Service; Master of Urban and Regional Planning, B.S. in Finance

Kerri Cahill, Visitor Use Management Team Lead and Planning Branch Chief; 10 years with National Park Service; Ph.D in Recreation Ecology

Tom Gibney, Project Manager/Landscape Architect. 3 years experience with the National Park Service, 9 years of experience in public lands planning and design. M.L.A. in landscape architecture and B.A. in classical civilizations. Registered Landscape Architect (RLA), Project Management Professional (PMP), Leadership in Energy and Environmental Design Accredited Professional (LEED AP)

Patrick Malone, former Project Manager; 5 years with the National Park Service, 9 years with state and local government, and 2 years with a nonprofit land trust; M.P.A. in Environmental Policy and Public Management, B.S. in Natural Resources and Environmental Management

Ray McPadden, Community Planner, 1 year with NPS, five years experience – US Army, Master of Community and Regional Planning, B.S. in Sociology

Susan McPartland, Visitor Use Specialist; 4 years experience with the National Park Service, experience in Geographic Information Systems (GIS), visitor use management; M.S. in Social Science, Certificate in GIS, B.A. in Environmental Studies, Art

Stephan Nofield, Outdoor Recreation Planner and former GMP Project Manager; 9 years with the National Park Service, 8 years Denver Service Center, 1 year NPS Washington Office

Harlan Unrau, Cultural Resource Specialist (retired)

Don Wojcik, Natural Resource Specialist; 4 years with the National Park Service, 11 years as natural resource planner with county government open space programs, 5 years as environmental policy analyst with nonprofit and academic organizations, and 2 years as civil engineer with municipal government; M.P.A. in Environmental Policy and Natural Resource Management; B.S. in Civil and Environmental Engineering

Production Services

Jim Corbett, Publications Chief; 9 years with the National Park Service

Wanda Gray Lafferty, Editor, 14 years of experience editing NPS documents, 3 years with the National Park Service, overall 31 years of related experience: undergraduate course work in communications and management; paralegal degree

Lisa Padgett, Visual Information Specialist (Student Intern); Studying Communication Design at Metropolitan State University, A.A. in Graphic Design/Print Production, B.S. in Civil Engineering Technology; 6 months with the National Park Service

PLANNING SUPPORT AND SPECIALISTS

Kristen Appel, Senior District Ranger, Northern Territory Government, Australia

Laura Castellini, Sustainability Coordinator, Golden Gate National Recreation Area; 15 years with the National Park Service; M.A. in Biology, B.S. in Zoology

Lee Ann Ciancetti, Administrative Assistant, Planning and Compliance, Golden Gate National Recreation Area

Allison Cryns, Environmental Protection Assistant, Golden Gate National Recreation Area; 3 years with the National Park Service, B.S. in Environmental and Natural Resources

Steve Griswold, Landscape Architect, Golden Gate National Recreation Area; 36 years with the National Park Service; M.A. in Landscape Architecture

Mark Grupe, GIS Specialist, NPS; 12 years with the National Park Service, 2 years with the U. S. Forest Service; M.A. in Geography, B.A. in Communication

Jan Harris, Planning Branch Chief, Denver Service Center; 30 years with the National Park Service, 2 years public involvement consulting, 4 years with Missouri Department Natural Resources; B.S. in Recreation and Park Administration (retired)

Marcus Koenen, Alcatraz Site Supervisor (acting), Golden Gate National Recreation Area; 10 years with the National Park Service: 5 years as inventory and monitoring program manager for San Francisco Bay Area network, 5 years as monitoring coordinator in Capital Region, NPS Washington Office; M.S. in Wildlife Ecology, B.A. in Cultural Anthropology

Sarah Koenen, Park Ranger, Golden Gate National Recreation Area; 11 years with the National Park Service, 2 years Compliance Coordinator, Golden Gate National Recreation Area; M.S. in Resource Interpretation

Robert Lieber, Director Retail and Product Development, Golden Gate National Parks Conservancy; 15 years with the Golden Gate National Parks Conservancy, 5 years as director for park retail operations, visitor center retail store design, product development, and park publishing, 10 years as associate director overseeing visitor center store design and product development; B.F.A. in Design

Andrea Lucas, Landscape Architect, Golden Gate National Recreation Area; 13 years with the National Park Service; M.A. in Environmental Planning , B.S. in Landscape Architecture

Roy McNamee, Staff and Park Recreation Specialist with California State Parks (CSP); 34 years with the state parks, 2 years as Superintendent, Angel Island State Park, 5 years as Special Projects Manager for CSP Marin District, 27 years in CSP Facility Management; B.A. Recreation Administration and Parks Management

Ricardo Perez, Supervisory Park Ranger, Rock Creek Park; 30 years with the National Park Service: Laborer and Maintenance Worker, Park Ranger Generalist, Interpretive Specialist, Wildland Firefighter, Incident Medical Specialist, Senior Law Enforcement Official, Supervisory Park Ranger, Acting Superintendent; Type I Commission, Federal Law Enforcement Training Center

Bruce Philips, Manager of Horse Patrol, Golden Gate National Recreation Area; 21 years with the National Park Service, 10 years with Golden Gate National Recreation Area, 8 years Horse Patrol, Golden Gate National Recreation Area; B.A. in Criminal Justice

Michelle Rios, Historical Architect Golden Gate National Recreation Area; 19 years with the National Park Service; M.A. in Architecture, B.A. in Economics

Carolyn Shoulders, Project Manager, Redwood Creek, Golden Gate National Recreation Area; 12 years with the National Park Service; M.S. in Restoration Ecology, B.A. in History and Literature

Brian Ullensvang, Chief of Environmental and Safety Programs, Golden Gate National Recreation Area; 15 years with the National Park Service, 12 years with Environmental Protection Agency, M.S. in Environmental Engineering, B.S. in Civil Engineering and Biology

Rich Weideman, Chief, Office for Partnerships and Philanthropic Support, NPS Washington Office; 29 years with the National Park Service: 18 years with Interpretation, 11 years with Public Affairs; B.S. in Resource Conservation

Betty Young, Program Director of Nurseries and Park Academy, Golden Gate National Parks Conservancy; 14 years with Golden Gate National Parks Conservancy, 13 years as director with other nurseries; B.S. in Plant Science and Nursery Management

CONSULTANTS

Jim Bacon, Superintendent, National Park of American Samoa; former Planner and Visitor Use Specialist, Yosemite National Park and NPS Denver Service Center; 5 years with the National Park Service: 2 years with Resource Management, 3 years with Park Planning, returned Peace Corps Volunteer; M.S. in Natural Resource Planning

Linda Dahl, Director of Parks and Open Space in Marin County; 18 years with the National Park Service, Chief of Planning Division, Yosemite National Park

Robert Manning, Professor at Rubenstein School of Environment and Natural Resources, University of Vermont; Ph.D. in Resource Conservation, M.S. in Parks and Outdoor Recreation, B.S. in Biology

Jeff Marion, Research Biologist, Eastern Region United States Geologic Survey; Ph.D. and M.S. in Recreation Resources Management, B.S. in Biology

Vicki McCusker, National Park Service Natural Resource Specialist; 7 years with the NPS Natural Sounds and Night Skies Division; B.S. in Ornamental Horticulture, M.S. in Agronomy

Bonnie Nelson, Senior Principal for Transit Operations Management Consultants, Nelson/Nygaard; B.S. in Civil Engineering andTransportation

Peter Newman, Associate Dean of Economics for Warner College of Natural Resources; Natural Sounds Programs expert with the National Park Service; Ph.D. in Natural Resources, M.S. in Forest Resource Management, B.A. in Political Science

Diane Nicholson, Regional Curator for NPS Pacific West Region; 33 years with the National Park Service, 16 years as Chief of Museum Management, Golden Gate National Recreation Area; M.A. in Museum Science, B.S. in History

Nina Roberts, Associate Professor, San Francisco State University Department of Recreation, Parks, and Tourism; 4 years with the National Park Service (consultant since 2005), 4 years as Education and Outreach Specialist with NPS Natural Resource Program Center; Ph.D. Natural Resource Management and Outdoor Recreation, Fulbright Scholar, India 2006

Cliff Riebe, Assistant Professor of Geology and Geophysics, University of Wyoming; Ph.D. in Geology, B.S. in Civil Engineering

Alexa Viets, Program Manager for Civil War Defenses NPS Washington Office; 10 years with the National Park Service, 1 year as Transportation Planner with Golden Gate National Recreation Area; M.A. in City Planning

Don Weeks, Hydrologist, NPS Natural Resources Program Center; 22 years with the National Park Service, 5 years with Woodward-Clyde Consultants; B.S. and M.S. in Geology (emphasis on Hydrogeology)

Appendixes

APPENDIX A: LEGISLATION

National Park Service

In 1916, the National Park Service was established through the passage of the National Park Service Organic Act. The mission of the agency is contained in the following words of that act:

> *The National Park Service] shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified . . . by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life 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.*

Congress supplemented and clarified these provisions through enactment of the General Authorities Act in 1970, and again through enactment of a 1978 amendment to that act (the "Redwood amendment," contained in a bill expanding Redwood National Park), which added the last two sentences in the following provision. The key part of that act, as amended, is as follows:

> *Congress declares that the national park system, which began with establishment of Yellowstone National Park in 1872, has since grown to include superlative natural, historic, and recreation areas in every major region of the United States, its territories and island possessions; that these areas, though distinct in character, are united through their inter-related purposes and resources into one national park system as cumulative expressions of a single national heritage; that, individually and collectively, these areas derive increased national dignity and recognition of their superlative environmental quality through their inclusion jointly with each other in one national park system preserved and managed for the benefit and inspiration of all the people of the United States; and that it is the purpose of this Act to include all such areas in the System and to clarify the authorities applicable to the system. Congress further reaffirms, declares, and directs that the promotion and regulation of the various areas of the National Park System, as defined in section 1c of this title, shall be consistent with and founded in the purpose established by section 1 of this title [the Organic Act provision quoted above], to the common benefit of all the people of the United States. The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.*

GOLDEN GATE NATIONAL RECREATION AREA

Public Law 92-589

An Act
To establish the Golden Gate National Recreation Area in the State of California, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

ESTABLISHMENT

Section 1. In order to preserve for the public use and enjoyment certain areas of Marin and San Francisco counties, California, possessing outstanding natural, historic, scenic, and recreational values, and in order to provide for the maintenance of needed recreational open space necessary to urban environment and planning, the Golden Gate National Recreation Area (hereinafter referred to as the "recreation area") is hereby established. In the management of the recreation area, the Secretary of the Interior (hereinafter referred to as the "Secretary") shall utilize the resources in a manner which will provide for recreation and educational opportunities consistent with sound principles of land use planning and management. In carrying out the provisions of this Act, the Secretary shall preserve the recreation area, as far as possible, in its natural setting, and protect it from development and uses which would destroy the scenic beauty and natural character of the area.

COMPOSITION AND BOUNDARIES

Sec. 2 (a) the recreation area shall comprise the lands, waters, and submerged lands generally depicted on the map entitled "Boundary Map, Golden Gate National Recreation Area", numbered NRA-GG-80,003A, sheets 1 through 3, and dated July, 1972.

(b) The map referred to in this section shall be on file and available for public inspection in the Offices of the National Park Service, Department of the Interior, Washington, District of Columbia. After advising the Committees on Interior and Insular Affairs of the United States House of Representatives and the United States Senate (hereinafter referred to as the "committees") in writing, the Secretary may make minor revisions of the boundaries of the recreation area when necessary by publication of a revised drawing or other boundary description in the Federal Register.

ACQUISITION POLICY

Sec. 3 (a) within the boundaries of the recreation area, the Secretary may acquire lands, improvements, waters, or interests therein, by donation, purchase, exchange or transfer. Any lands, or interests therein, owned by the State of California or any political subdivision thereof, may be acquired only by donation. When any tract of land is only partly within such boundaries, the Secretary may acquire all or any portion of the land outside of such boundaries in order to minimize the payment of severance costs. Lands so acquired outside of the boundaries may exchanged by the Secretary for non-Federal lands within the boundaries. Any portion of land acquired outside of the boundaries and not utilized for exchange shall be reported to the General Services Administrative for disposal under the Federal Property and Administrative Services Act of 1949 (63 Stat. 377), as amended: *Provided*, That no disposal shall be for less than fair market value. Except as herein after

provided, Federal property within the boundaries of the recreation area is hereby transferred without consideration to the administrative jurisdiction of the Secretary for the purpose of this Act, subject to the continuation of such existing uses as may be agreed on between the Secretary and the head of the agency formerly having jurisdiction over the property. Notwithstanding any other provisions of law, the Secretary may develop and administer for the purposes of this Act structures or other improvements and facilities on lands for which he receives a permit of use and occupancy from the Secretary of the Army.

(b) Fort Cronkhite, Fort Barry, and the westerly one-half of Fort Baker, in Marin County, California, as depicted on the map entitled "Golden Gate Military Properties" numbered NRAGG-20,002 and dated January 1972, which shall be on file and available for public inspection in the offices of the National Park Service, are hereby transferred to the jurisdiction of the Secretary for purposes of this Act, subject to continued use and occupancy by the Secretary of the Army of those lands needed for existing air defense missions, reserve activities and family housing, until he determines that such requirements no longer exist. The Coast Guard Radio Receiver Station, shall remain under the jurisdiction of the Secretary of the Department in which the Coast Guard is operating. When this station is determined to be excess to the needs of the Coast Guard, it shall be transferred to the jurisdiction of the Secretary for purposes of this Act.

(c) The easterly one-half of Fort Baker in Marin County, California, shall remain under the jurisdiction of the Department of the Army. When this property is determined by the Department of Defense to be excess to its needs, it shall be transferred to the jurisdiction of the Secretary for purposes of this Act. The Secretary of the Army shall grant to the Secretary reasonable public access through such property to Horseshoe Bay, together with the right to construct and maintain such public service facilities as are necessary for the purposes of this Act. The precise facilities and location thereof shall be determined between the Secretary and the Secretary of the Army.

(d) Upon enactment, the Secretary of the Army shall grant to the Secretary of the Army shall grant to the Secretary the irrevocable use and occupancy of one hundred acres of the Baker Beach area of the Presidio of San Francisco, as depicted on the map referred to in subsection (b).

(e) The Secretary of the Army shall grant to the Secretary within a reasonable time, the irrevocable use and occupancy of forty-five acres of the Crissy Army Airfield of the Presidio as depicted on the map referred to in subsection (b)

(f) When all or any substantial portion of the remainder of the Presidio is determined by the Department of Defense to be excess to its needs, such lands shall be transferred to the jurisdiction of the Secretary for purposes of this Act. The Secretary shall grant a permit for continued use and occupancy for that portion of said Fort Point Coast Guard Station necessary for activities of the Coast Guard.

(g) Point Bonita, Point Diablo, and Lime Point shall remain under the jurisdiction of the Secretary of the Department in which the Coast Guard is operating. When this property is determined to be excess to the needs of the Coast Guard, it shall be transferred to the jurisdiction of the Secretary for purposes of this Act. The Coast Guard may continue to maintain and operate existing navigational aids: *Provided*, That access to such navigational aids and the installation of necessary new navigational aids within the recreation area shall be undertaken in accordance with plans which are mutually acceptable to the Secretary and the Secretary of the Department in which the Coast Guard is operating and which are consistent with both the purpose of this Act and the purpose of existing statues dealing with establishment, maintenance, and operation of navigational aids.

(h) That portion of Fort Miley comprising approximately one and seven-tenths acres of land presently used and required by the Secretary of the Navy for its inshore, undersea warfare installations shall remain under the administrative jurisdiction of the Department of the Navy until such time as all or any portion thereof is determined by the Department of Defense to be excess to its needs, at which time such excess portion shall be transferred to the administrative jurisdiction of the Secretary for purposes of this Act.

(i) New construction and development within the recreation area on property remaining under the administrative jurisdiction of the Department of the Army and not subject to the provisions of subsection (d) or (e) hereof shall be limited to that which is required to accommodate facilities being relocated from property being transferred under this Act to the administrative jurisdiction of the Secretary or which is directly related to the essential missions of the Sixth United States Army: *Provided, however,* That any construction on presently undeveloped open space may be undertaken only after prior consultation with the Secretary. The foregoing limitation on construction and development shall not apply to expansion of those facilities known as Letterman General Hospital or the Western Medical Institute of Research.

(j) The owner of improved property on the date of its acquisition by the Secretary under the Act may, as a condition of such acquisition, retain for himself and his heirs and assigns a right of use and occupancy of the improved property for noncommercial residential purposes for a definite term of not more than twenty-five years, or, in lieu thereof, for a term ending at the death of the owner or the death of his spouse, whichever is later. The owner shall elect the term to be reserved. Unless the property is wholly or partially donated to the United States, the Secretary shall pay to the owner the fair market value of the property on the date of acquisition minus the fair market value on that date of the right retained by the owner. A right retained pursuant to this section shall be subject to termination by the Secretary on his determination that it is being exercised in a manner inconsistent with the purpose of this Act, and it shall terminate by operation of law on the Secretary's notifying the holder of the right of such determination and tendering to him an amount equal to the fair market value of that portion of the right which remains unexpired.

(k) The term "improved property", as used in subsection (j), means a detached, noncommercial residential dwelling, the construction of which was begun before June 1, 1971, together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures accessory to the dwelling which are situated on the land so designated.

(1) Whenever an owner of property elects to retain a right of use and occupancy as provided for in the Act, such owner shall be deemed to have waived any benefits or rights accruing under sections 203, 204, 205, and 206 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (84 Stat. 1894), and for the purposes of those sections such owner shall not be considered a displaced person as defined in section 101 (6) of that Act.

(m) Notwithstanding any other provisions of law, the Secretary shall have the same authority with respect to contracts for the acquisition of land and interests in land for the purposes of this Act as was given the Secretary of the Treasury for other land acquisitions by section 34 of the Act of May 30, 1908, relating to purchase of sites for public buildings (35 Stat. 545), and the Secretary and the owner of land to be acquired under this Act may agree that the purchase price will be paid in periodic installments over a period that does not exceed 10 years, with interest on the unpaid balance thereof at a rate which is not in excess of the current average market yield on outstanding marketable obligations of the United States with remaining periods to maturity comparable to the average

maturities on the installments. Judgments against the United States for amounts in excess of the deposit in court made in condemnation actions shall be subject to the provisions of the Act of July 27, 1956 (70 Stat. 624) and sections 2414 and 2517 of title 28, United States Code.

ADMINISTRATION

Sec.4. (a) The Secretary shall administer the lands, waters and interests therein acquired for the recreation area in accordance with the provisions of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2–4), as amended and supplemented, and the Secretary may utilize such statutory authority available to him for the conservation and management of wildlife and natural resources as he deems appropriate to carry out the purposes of this Act. Notwithstanding their inclusion within the boundaries of the recreation area, the Muir Woods National Monument and Fort Point National Historic Site shall continue to be administered as distinct and identifiable units of the national park system in accordance with the law applicable to such monument and historic site.

(b) The Secretary may enter into cooperative agreements with any Federal agency, the State of California, or any political subdivision thereof, for the rendering, on a reimbursable basis, of rescue, firefighting, and law enforcement and fire preventive assistance.

(c) The authority of the Army to undertake or contribute to water resource developments, including shore erosion control, beach protection, and navigation improvements on land and/or water within the recreation area shall be exercised in accordance with plans which are mutually acceptable to the Secretary and the Secretary of the Army and which are consistent with both the purpose of this Act and the purpose of existing statutes dealing with water and related resource developments.

(d) The Secretary, in cooperation with the State of California and affected political subdivisions thereof, local and regional transit agencies, and the Secretaries of Transportation and of the Army, shall make a study for a coordinated public and private transportation system to and within the recreation area and other units of the national park system in Marin and San Francisco counties.

ADVISORY COMMISSION

Sec.5. (a) There is hereby established the Golden Gate National Recreation Area Advisory Commission (hereinafter referred to as the "Commission").

(b) The Commission shall be composed of fifteen members appointed by the Secretary for terms of three years each.

(c) Any vacancy in the Commission shall be filled in the same manner in which the original appointment was made.

(d) Members of the Commissions shall serve without compensation, as such, but the Secretary may pay, upon vouchers signed by the Chairman, the expenses reasonably incurred by the Commission and its members in carrying out their responsibilities under this Act.

(e) The Secretary, or his designee, shall from time to time, but at least annually, meet and consult with the Commission on general policies and specific matters related to planning, administration and development affecting the recreation area and other units of the national park system in Marin and San Francisco counties.

(f) The Commission shall act and advise by affirmative vote of a majority of the members thereof.

(g) The Commission shall cease to exist 10 years after the enactments of this Act.

APPROPRIATION LIMITATION

Sec.6. There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this of this Act, but not more than $61,610,000 shall be appropriated for the acquisition of lands and interests in lands. There are authorized to be appropriated not more than $58,000,000 (May 1971 prices) for the development of the recreation area, plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicted by engineering cost indices applicable to the type of construction involved herein.

Approved October 27, 1972.

Legislation Summary, Golden Gate National Recreation Area

Public Law No.	Title	Summary	Date
92-589	Golden Gate National Recreation Area, Calif.	This act establishes the purpose of Golden Gate National Recreation Area, delineates the composition and boundaries, describes the acquisition policy and administration, creates an advisory committee, and discusses appropriations.	10/27/1972
93-544	Golden Gate National Recreation Area, Calif., additional land	Amended the act of 10/27/72 to include the acquisition of contiguous lands in southern Marin, Muir, and Stinson Beaches. (Oakwood Valley, Tennessee Valley, Wolfback Ridge, and Haslett Warehouse).	12/26/1974
95-625	National Parks and Recreation Act of 1978	Expanded boundaries in Marin and San Francisco (Lagunitas Creek watershed, Devils Gulch, Cheda, McIsaac, Zanardi, and Rogers ranches). Strengthened continued use and occupancy provisions for agriculture, and limited new construction. It also established the ability to obtain proceeds from rental space in the warehouse, Cliffhouse, and Louis' restaurant. It increased the park's advisory commission from 15 to 17.	11/10/1978
96-344	Historic Sites, Buildings and Antiquities Act, administration improvement	Added the acreage of the McFadden, Genazzi, and Martinelli ranches. Extended the terms of the advisory committee from 3 to 5 years. Recommended Sweeney Ridge for addition to Golden Gate National Recreation Area.	9/8/1980
96-607	National Park System, amendment	Adds Sweeney Ridge and increased membership of the advisory committee from 17 to 18. Transfer administration of Scenic and Recreational easements on Peninsula watershed lands to the NPS. Authorizes the NPS to seek appropriate agreement needed to establish a trail within this property and connecting with a suitable beach unit.	12/28/1980
98-28	Golden Gate National Recreation Area, dedication to Congressman Phillip Burton	Dedicates Golden Gate National Recreation Area to Congressman Burton.	5/10/1983
102-299	Golden Gate National Recreation Area Addition Act of 1992	Addition of the Phleger Estate.	6/9/1992
106-113	Consolidated Appropriations for Fiscal Year ending 9/30/2000	Exemption of all taxes and special assessments, except sales tax. Such areas as Fort Baker shall remain under exclusive Federal jurisdiction.	11/29/1999
106-291	Department of the Interior appropriation	Authority for fee-based education, interpretive and visitor service functions within the Crissy Field and Fort Point areas of the Presidio.	10/11/2000
106-350	Golden Gate National Recreation Area Boundary Adjustment Act of 2000	Additions as depicted on map "numbered NPS-80,076, and dated July 2000/PWR-PLRPC."	10/24/2000
109-131	Rancho Corral de Tierra Golden Gate National Recreation Area Boundary Adjustment Act	Amends PL 92-589 to add Rancho Corral de Tierra lands, with limitation to acquire this land only from a willing seller.	12/20/2005

MUIR WOODS NATIONAL MONUMENT

January 9, 1908

By The President of The United States of America

A PROCLAMATION

WHEREAS. William Kent and his wife, Elizabeth Thatcher Kent, of the City of Chicago, in County of Cook in the State of Illinois, did, on December 26, 1907, pursuant to the Act of Congress entitled, "An Act for the preservation of American Antiquities," approved June 8, 1906, by their certain deed of relinquishment and conveyance, properly executed in writing and acknowledged, relinquish, remise, convey and forever quitclaim to the United States of America the following mentioned lands at that time held by them in private ownership and lying and being in township One North, of Range Six West, Mount Diablo Meridian, in the County of Marin, in the State of California, and bounded and particularly described as follows, to-wit:

Beginning at a stake "A.7" driven in the center of the road in Redwood Canon and located by the following courses and distances from the point of commencement of the tract of land, which was conveyed by the Tamalpais Land and Water Company to William Kent by a deed dated August 29th, 1905, and recorded in the office of the County Recorder of Marin County, California, Book 95 of Deeds at page 58, to-wit:_ North eighteen degrees thirty-two minutes East two hundred thirty two and sixty-four hundredths feet, North sixty-six degrees thirty minutes West one hundred sixty-seven and thirty-four hundredths feet, North eighty-six degrees twenty-five minutes West ninety-eight and sixty-two hundredths feet, North seventy degrees no minutes, West two hundred forty-one and seven hundredths feet, North fifty-seven degrees twenty-nine minutes West one hundred seventy-eight and three hundredths feet; North forty-six degrees twenty-two minutes West two hundred thirty-five and thirty-nine hundredths feet and North twenty-four degrees twenty-five minutes West two hundred twenty-five and fifty-six hundredths feet; thence from said stake "A.7", the point of beginning, South fifty-four degrees nineteen minutes West fourteen hundred eighty-two and seven tenths feet to Station A.8 from which Station 4 of the survey of the tract of land conveyed to William Kent as aforesaid bears south fifty-four degrees nineteen minutes west three hundred ten feet distant; thence from said Station A.8 North forty-seven degrees thirty minutes West twenty-six hundred eighty feet; thence due West six hundred fifty and eight tenths feet; thence North fifty-two degrees thirty minutes West eleven hundred feet; thence North nine-teen degrees forty-five minutes West ten hundred fifty-eight and four tenths feet to Station A.12. from which Station 16 of the Survey of the tract of land conveyed to William Kent as aforesaid bears South eighty-three degrees forty-two minutes West three hundred ten feet distant; thence North eighty-three degrees forty-two minutes East thirty-one hundred nine and two tenths feet; thence north fifty-five degrees twenty-eight minutes East fifteen hundred fifty feet to an iron bolt, three-quarters of an inch in diameter and thirty inches long, Station 14; thence South seventeen degrees eighteen minutes East twenty-eight hundred twenty and nine tenths feet; thence South four degrees ten minutes East nine hundred thirty feet to a stake "A.16" driven in the center of a graded road; and thence South forty-five degrees seventeen minutes West two hundred ninety-eight and five tenths feet to said stake A.7. the place of beginning. Containing an area of two hundred ninety-five acres a little more or less, and,

WHEREAS, said relinquishment and conveyance has been accepted by the Secretary of the Interior in the manner and for the purposes prescribed in said Act of Congress, and

WHEREAS, and extensive growth of redwood trees (Sequoia sempervirens) embraced in said land is of extraordinary scientific interest and importance because of the primeval character of the forest in which it is located, and if the character, age and size of the trees,

Now, therefore, I, Theodore Roosevelt, President of United States of America, by virtue of the power and authority in me vested by Section 2 of said Act of Congress, do hereby declare and proclaim that said grove and all of the land hereinbefore described and fully delineated in the diagram hereto attached and made a part hereof, are hereby reserved from appropriation and use of all kinds under all the public land laws of the United States and set apart as a National Monument, to be known and recognized as the Muir Woods National Monument.

Warning is hereby expressly given to all unauthorized persons not to appropriate, cut, injure, destroy or take away any trees on said land and not to locate or settle upon any of said land.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this 9th day of January in the year of our Lord one thousand nine hundred and eight, and of the Independence of the United States the one hundred and thirty-second.

THEODORE ROOSEVELT

By the President:

ELIHU ROOT

Secretary of State

APPENDIX B:
DESCRIPTION OF MANAGEMENT PLANS RELATED TO THIS PLAN

Appendix B provides an overall description of management plans from federal, state, regional and local government agencies along with their relationship to this management plan.

In addition to the overall vision and management plans described in the text of the general management plan, the National Park Service develops detailed project and program implementation plans in order to implement the goals and objectives of those broader plans. These implementation plans cover topics such as natural and cultural resource restoration and preservation, visitor use, transportation, and park operations.

FEDERAL PLANS

National Park Service Plans Currently Being Prepared

Alcatraz Ferry Embarkation Environmental Impact Statement

Study objectives are to direct the establishment of the primary embarkation site in San Francisco that will provide for a safe, consistent, and stable visitor departure site for access to Alcatraz Island. The site will meet the following criteria:

- Allow for development of an identifiable, distinct, first-class NPS visitor welcome area with a clearly defined sense of arrival, the setting of which is in keeping with a National Park site and an authentic Alcatraz experience.
- Provide a portal to the park that begins to connect visitors to the Alcatraz story, Golden Gate National Recreation Area, National Park Service, and the natural and cultural history of the San Francisco Bay Area.
- Establish a long-term location for optimizing ferry berths, critical operational facilities, and logistical support requirements, available for a full and open competition of contracts.
- Ensure NPS ability to define all aspects of the visitor experience, from pre-arrival to departure, with flexibility to modify and to define interpretive materials, indoor and outdoor space, signage and other features of the site, while accommodating emerging technologies, growth, visitor needs, etc.
- Provide adequate visitor support space and facilities that offer a comfortable, fully accessible, and welcoming experience while waiting for a ferry and learning about Alcatraz and the park, accommodating the visitor flow to and through the site without confusion.
- Ensure convenient alternative access to the site through a variety of transportation modes, while providing for the opportunity to connect to other parklands.
- Avoid disruption of service when the current contract expires in 2016.

Dog Management Plan for Golden Gate National Recreation Area (draft)

Golden Gate National Recreation Area is involved a planning and public involvement process to decide how best to manage dog walking in the park. This process will result in a *Dog Management Plan / Environmental Impact Statement*. This planning process will

develop a range of alternatives with clear, enforceable guidelines for the manner and extent of dog walking in appropriate areas of the park. The alternatives will specify which of the lands managed by Golden Gate National Recreation Area would be open to on-leash dog walking and off-leash dog walking, and which are closed to dog walking. The goal of the process is to allow dog walking while

- protecting park resources
- providing a variety of visitor experiences
- reducing visitor use conflicts
- ensuring that park resources and values are available for future generations
- increasing the safety of staff and visitors

The park will evaluate the impacts of the range of alternatives and identify a preferred alternative for the draft *Dog Management Plan / Environmental Impact Statement*. The actions of the general management plan alternatives have been continuously reviewed as the *Dog Management Plan* evolves in order to ensure consistency between the two planning efforts.

Golden Gate National Recreation Area – Long Range Transportation Plan

The *Long Range Transportation Plan* is being developed to guide the park's transportation program. The plan tiers to the general management plan's vision for transportation and outlines the strategies for implementing the park's transportation goals for the next 20 years. This plan will reflect the vision as described in the general management plan.

Visitor Facility at Lands End

The Lands End project has proceeded in several key phases, restoring native plant habitat, improving forest health, expanding scenic vistas, creating new overlooks, enhancing trail experiences, and building a new visitor facility, the Lands End Lookout. The Lands End Lookout opened in April 2012. Lands End project highlights also include the Lands End Trailhead, the USS San Francisco Memorial Overlook, and continued volunteer park stewardship of natural and cultural resources.

National Park Service Trails and Transportation Plans and Programs

South Access to the Golden Gate Bridge – Doyle Drive Final Environmental Impact Statement/Report

Doyle Drive is a portion of Highway 101 that winds 1.5 miles along the northern edge of San Francisco and connects the San Francisco peninsula to the Golden Gate Bridge and the North Bay. It is within the Presidio of San Francisco and provides access to historic and cultural landmarks including Golden Gate National Recreation Area, the Presidio, the Golden Gate Bridge and the Palace of Fine Arts. Originally constructed in 1936 with narrow lanes, no median, and no shoulders, Doyle Drive is approaching the end of its useful life.

The purpose of the proposed project is to improve the seismic, structural, and traffic safety of Doyle Drive within the setting and context of the Presidio of San Francisco and its purpose as a National Park. Specific objectives of the Doyle Drive project are to

- improve the seismic, structural, and traffic safety on Doyle Drive
- maintain the functions that the Doyle Drive corridor serves as part of the regional and city transportation network
- improve the functionality of Doyle Drive as an approach to the Golden Gate Bridge

- preserve the natural, cultural, scenic and recreational values of affected portions of the Presidio, a national historic landmark district
- be consistent with the *San Francisco General Plan* and the *General Management Plan Amendment Final Environmental Impact Statement*, Presidio of San Francisco, Golden Gate National Recreation Area (NPS 1994a and 1994b) for Area A of the Presidio and the *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco* (Presidio Trust 2002)
- minimize the effects of noise and other pollution from the Doyle Drive corridor on natural areas and recreational qualities at Crissy Field and other areas adjacent to the project area
- minimize the traffic impacts of Doyle Drive on the Presidio and local roadways
- improve intermodal and vehicular access to the Presidio
- redesign the Doyle Drive corridor using the parkway concept described within the *Doyle Drive Intermodal Study* (1996)

The alternatives of the general management plan are consistent with this plan.

Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement (2009)

The purpose of the plan is to provide improved access to and within the Marin Headlands and Fort Baker for a variety of users, and to initiate these improvements in a way that minimizes impacts on the rich natural and cultural resources of the Marin Headlands and Fort Baker study area. The Marin Headlands and Fort Baker are in the San Francisco Bay area at the north end of the Golden Gate Bridge, across the bay from San Francisco. The Marin Headlands span the southern tip of the Marin Peninsula, from U.S. Highway 101 to the western coastline, a 2,500-acre area. Fort Baker is a 335-acre site directly adjacent to the Headlands on the east side of Highway 101.

Implementation of this plan would provide infrastructure and access improvements in the park to meet the following plan goals:

- Promote public transit, pedestrian, and bicycle travel to and within the park to improve visitor experience and enhance environmental quality.
- Rehabilitate the Marin Headlands and Fort Baker road and trail infrastructure in a manner that protects resources and improves safety and circulation.
- Reduce traffic congestion and improve safety at key park locations and connecting roads.

To accomplish these goals the roadways would be rehabilitated or reconstructed/ widened without altering their character defining features, and parking facilities would be improved. A greater number of transit options would be provided to and within the study area. Parking fees would be collected to fund improved transit services. Extensive pedestrian facility enhancements would be implemented, including closing and rerouting existing trails and constructing new trails. Bicycle facilities would be improved with a few new paths and bike lanes. Car-free days would be implemented on a trial basis for a maximum of seven days per year.

The goals and actions of the *Marin Headlands and Fort Baker Transportation Infrastructure and Management Plan Final Environmental Impact Statement* are appropriate for all general management plan alternatives.

Trails Forever. The mission of Trails Forever is to improve the quality of trails in Golden

Gate National Recreation Area, enhance the experiences of park users, support resources preservation, and engage the community in sustaining the parks trail system in perpetuity. Trails Forever is an initiative of the Golden Gate National Parks Conservancy in partnership with the National Park Service and Presidio Trust. The signature project is to complete the California Coastal Trail corridor within Golden Gate National Recreation with trail connections to communities in Marin, San Francisco, and San Mateo. The actions of the general management plan alternatives are consistent with the goals and projects of Trails Forever.

National Park Service Restoration Plans

Alcatraz Island Historic Preservation and Safety Construction Program Environmental Impact Statement (2001)

The implementation of this plan works to protect human health and safety, stabilize deteriorating historic structures to protect the national historic landmark, and implement needed repairs in a manner that minimizes adverse biological effects. The repairs include replacement of badly deteriorated poles underneath the dock, seismic retrofit of the cell house, and repair and stabilization of other historic structures to provide for public safety and historic preservation. The project is a construction program addressing critically needed repairs on Alcatraz Island. The actions in the general management plan alternatives are consistent with the direction of this environmental impact statement.

Easkoot Creek Restoration at Stinson Beach Environmental Assessment (2003)

The Easkoot Creek restoration addressed two important limiting factors for salmonid fish production: (1) the absence of pool habitats with associated large woody debris; and (2) the lack of natural riparian habitat. This project contributes to the other restoration effort upstream and downstream of Golden Gate National Recreation Area lands, will yield long-term beneficial effects on the steelhead trout and coho salmon habitat of Easkoot Creek. The actions in the general management plan alternatives are consistent with the goals and projects associated with Easkoot Creek restoration.

Lower Redwood Creek Floodplain and Salmonid Habitat Restoration, Banducci Site Environmental Assessment (2007)

The purpose of this project is to substantially restore natural floodplain and creek processes on lower Redwood Creek for the benefit of aquatic and terrestrial fauna and long-term natural resources conditions in the Redwood Creek watershed. The environmental assessment guided the implementation of restoration projects such as levee removal, floodplain enhancements, and protection areas for threatened and endangered species. The plan contributes to the implementation of the Redwood Creek Watershed Vision. The actions in the general management plan alternatives are consistent with the goals and projects associated with the lower Redwood Creek floodplain and salmonid habitat restoration.

This project takes place at two locations in lower Redwood Creek near Muir Beach. The purpose of the project is to improve hydrologic and geomorphic functions at the Pacific Way site and thus reduce the magnitude, frequency, and duration of flooding on Pacific Way and to reduce the risk of channel avulsion at the Pacific Way site. The project also reconnects lower Redwood Creek to its floodplain and expands riparian vegetation at the Banducci site. In addition, the project increases in-channel habitat complexity and reestablishes geomorphic processes at the Banducci site. These actions work to improve habitat for

coho salmon and steelhead. The actions in the general management plan alternatives are consistent with the goals and projects associated with the lower Redwood Creek flood reduction measures and floodplain/channel restoration.

Lower Redwood Creek Interim Flood Reduction Measures and Floodplain / Channel Restoration Environmental Assessment

This environmental assessment presents and analyzes actions proposed by the National Park Service at two locations in lower Redwood Creek near Muir Beach, in the Golden Gate National Recreation Area. Actions are proposed in two locations:

1. Along Pacific Way, the access road to Muir Beach and to several residences in the adjacent community, interim measures are proposed in a 2,300-foot-long reach of Redwood Creek to reduce flooding that closes the road and to prevent loss of the stream channel for fish passage.
2. In a 1,800-foot-long reach of Redwood Creek adjacent to the former Banducci flower farm, actions are proposed to restore in-stream and floodplain habitat.

The purpose of the project is to:

1. Improve hydrologic and geomorphic functions at the Pacific Way site and thus reduce the magnitude, frequency, and duration of flooding on Pacific Way and reduce the risk of channel avulsion at the Pacific Way site.
2. Reconnect the creek to its floodplain and expand riparian vegetation at the Banducci site, thus improving habitat for coho salmon.
3. Increase in-channel habitat complexity and reestablish geomorphic processes at the Banducci site, thus improving habitat for coho salmon and steelhead.

The actions of the general management plan alternatives are consistent with the goals and project work associated with this plan.

Mori Point Restoration and Trail Plan / Environmental Assessment (2006)

The staff of Golden Gate National Recreation Area and the Golden Gate Parks Conservancy are working to restore habitat and to develop a safe and sustainable trail system at Mori Point. The goals of this project are to:

- protect and enhance habitat for the federally endangered San Francisco garter snake and the federally threatened California red-legged frog at Mori Point
- preserve and restore the ecological integrity of Mori Point habitats by reducing threats to native plant communities and natural processes
- develop a safe and sustainable trail system, incorporating the California Coastal Trail that improves recreational experiences and reduces impacts on park resources

Restoration activities include actions such as:

- improving hydrologic and habitat connectivity between upland and wetland areas
- creation of San Francisco garter snake foraging habitat
- reduction and repair of coastal erosion
- restoration of native plant communities
- removal of trash, and debris

The project develops a variety of trail experiences for different user groups and

meets management objectives to protect and enhance natural resource values and provide public access. Hiker-only designations will be in effect on all segments through, or leading to, steep and erosion-prone areas. Multiuse opportunities (hiking, bicycling, and equestrian uses) were identified on the California Coastal Trail and its main connector routes. The actions of the general management plan alternatives are consistent with the goals and project work associated with this plan.

Ocean Park Stewardship Action Plan (2007–2008)

The National Park Service developed a strategy to increase its emphasis on ocean resource management and conservation. The *Ocean Park Stewardship Action Plan* identifies critical issues and ways to address them cooperatively with federal, state, tribal, and private partners. The National Park Service will work with partners under existing funding levels to implement this plan. In doing so, the Park Service has developed specific actions relating to the following major topics:

- create a seamless network of ocean national parks, national marine sanctuaries, national wildlife refuges, and national estuarine research reserves
- discover, map, and protect ocean parks
- engage visitors in ocean park stewardship
- increase NPS technical capacity for ocean exploration and stewardship

The general management plan provides specific management guidance and objectives for addressing these topics.

Pacific Ocean Park Strategic Plan

The concerns regarding the dramatic declines in the health of the marine ecosystems has the National Park Service focusing more attention on stewardship and protection of ocean resources in the national park system. The *Pacific Ocean Park Strategic Plan* serves to lead the NPS Pacific West and Alaska Region's coastal national parks toward implementation and achievement of the overall goal of the *Ocean Park Stewardship Action Plan* (previously described). The plan provides action items specific to the following goals:

Strategy 1: Establish a Seamless Network of Ocean Parks, Sanctuaries, Refuges, and Reserves

- Facilitate partnership opportunities among federal, state, and local agencies and nongovernment organizations toward enhanced marine resource conservation and education.
- Facilitate partnership opportunities with neighboring countries (specifically Canada, Mexico, and neighboring Pacific Islands), and build sister park relationships throughout the Pacific and Arctic Oceans to enhance marine resource conservation and education.
- Explore means to facilitate international travel to other countries in order to communicate and cooperate on an informal and routine basis.

Strategy 2: Inventory, Map, and Protect Ocean Parks

- Inventory and map natural and cultural resources within the submerged (includes the intertidal zone) boundaries of ocean parks.
- Expand the natural resource vital signs monitoring program to more

fully address ocean and estuarine resources.

- Understand and quantify threats to natural, cultural, and subsistence resources, including those associated with climate change and land- and water-based activities and develop mitigation or restoration strategies.
- Expand understanding of ocean park boundaries, jurisdictions, and authorities.
- Increase the ocean and marine presence of the National Park Service and other agencies.
- Proactively inform park management and the public of emerging issues that could impact the status and function of marine resources. Identify strategies to address these issues.
- Ensure that park-specific ocean stewardship issues and knowledge (both natural and cultural resources) are available and synthesized for planning teams.

Strategy 3: Engage Visitors and the Public in Ocean Park Stewardship

- Create a communication strategy for the Pacific West and Alaska regions' ocean parks to better inform the public on topics of ocean stewardship.
- Enhance awareness and understanding of ocean stewardship issues through the development of interpretive materials and recreational opportunities.
- Explore approaches to engage visitors, teachers, and students in the practice of ocean stewardship through experiential learning.
- Demonstrate a commitment to ocean stewardship through adoption of sustainable operations and practices at ocean parks.
- Demonstrate a commitment to ocean stewardship through adoption of sustainable tourism and recreational opportunities, operations, and practices at ocean parks.
- Maximize the existing capacity of the Pacific West and Alaska regions and ocean park units to engage in stewardship activities.

Strategy 4: Increase Technical Capacity for Ocean Exploration and Stewardship

- Increase the technical capacity for ocean exploration and stewardship.
- Evaluate the effectiveness of the Pacific West and Alaska Region Ocean Park Stewardship Strategy in conserving coastal and marine resources.
- Generate awareness among park managers of the significance of marine resources and protection responsibilities.
- Understand and anticipate the role of ocean park stewardship within the urban corridor, given changing demography, development patterns, economies, and societal preferences.
- Pursue funding opportunities to increase the technical capacity for ocean exploration and stewardship.

The general management plan provides specific management guidance and objectives for addressing the four major strategies identified in the *Ocean Park Stewardship Action Plan*.

Redwood Creek Watershed: Vision for the Future (2003)

The *Redwood Creek Watershed: Vision for the Future*, while not a binding document, was jointly prepared and agreed to in 2003 by public agencies and stakeholders in the Redwood Creek watershed. The Vision document provides guiding principles and desired future conditions to serve as guidelines for planning and projects in the

watershed; identifies desired future conditions for natural resources, cultural resources, visitor experience, resident community, and infrastructure and facilities. The goals of this project help achieve numerous desired future conditions for intact watershed health, protection of natural processes such as flooding, native plant communities, a full range of hydraulic and geomorphic functions, habitat for special status species, reduction of human-caused erosion that could impact fish or aquatic habitat, and reduction of invasion by nonnative plant species. The Vision document does not alter or override existing policies of the participating agencies. Rather, it provides guidelines to support future planning and projects in the watershed, ensuring that planning and projects within the scope of this vision strive to meet the common shared goals. The vision and goals for Redwood Creek watershed were incorporated into the alternatives for the general management plan.

Wetland and Creek Restoration at Big Lagoon, Muir Beach Final Environmental Impact Statement (2008)

The focus of this project is the restoration of the lower Redwood Creek watershed at Muir Beach in Marin County. The Big Lagoon site includes the wetlands, floodplain, and lagoon at the mouth of Redwood Creek at Muir Beach. The project works to restore/enhance ecological conditions and processes, reducing flooding of local infrastructure, and providing public access to the beach and restored wetland and creek. Key issues that were addressed include habitat for fish and wildlife, ecosystem conditions and processes, effects on special status plant and animal species, hydrology, flood hazards, traffic, visitor access, and visitor experience. The actions of the general management plan alternatives are consistent with the goals and project work associated with this plan.

National Park Service Program Implementation Plans

Alcatraz Development Concept Plan and Environmental Assessment (1993)

The development concept plan provides direction in management of the entire island, works to balance expansion of visitor access with habitat enhancement, wildlife protection and cultural resource protection, and hazard remediation. The development concept plan will need to be revised or amended to incorporate the changes proposed by the selected alternative in the general management plan.

Bay Area Museum Resource Center Plan (2010)

The eight San Francisco Bay Area national parks have considerable long- and short-term needs for park collection storage. These parks do not have sufficient space to store their collections and for the most part, the collection storage facilities do not meet NPS standards. Many occupy substandard facilities, which result in deficiencies on the NPS Checklist for the Preservation and Protection of Museum Collections. These conditions diminish the ability of limited numbers of staff to provide basic preservation and protection service to NPS collections. Furthermore, the location and condition of current facilities places many of the parks' collections at risk due to climate change and rising sea levels. Wide geographic distribution of these multiple collection management facilities greatly hampers, if not precludes, visitor access to the collections for research and interpretation. Finally, existing facilities do not have the capacity to accommodate the NPS standard growth rate of 20% over the next 25 years.

The proposal of a Bay Area Museum Resource Center seeks to establish a combined collection storage and research facility for the national parks

in the San Francisco Bay Area. This partnership offers the opportunity to provide greater preservation and accessibility to NPS collections. It seeks to share a collections management facility (with a primary focus on artifacts) that would improve collection storage and maximize operational efficiency by sharing resources.

Comprehensive Interpretive Plan for Golden Gate National Recreation Area (2011)

Composed of three components, a Long Range Interpretive Plan, an Annual Implementation Plan, and Interpretive Database, this plan serves to guide the park's interpretation and education programs. This plan is considered a "living document" that is reviewed often and adjusted accordingly. It is the goal of Golden Gate National Recreation Area to reach out to a diverse urban community, promote the richness and breadth of the national park system to many who are experiencing a national park for the first time and foster broad-based public stewardship through various volunteer and partnership programs.

Fire Management Plan / Final Environmental Impact Statement for Golden Gate National Recreation Area (2006)

An update to the 1993 Fire Management Plan, this plan reflects the importance of a more concerted effort to effectively reduce wildfire risk to park resources and to private property along the wildland urban interface. The plan examines the feasibility of facilitating the role of fire where it is safe to do so and more fully addresses cultural resource concerns. The plan includes all lands within Golden Gate National Recreation Area, Muir Woods National Monument, and Fort Point National Historic Site. The plan is a strategic, operational plan intended to guide the fire management program and was prepared to meet the requirements of NPS Director's Order 18. The plan includes procedures for managing the full range of fire management activities, including wildland fire suppression and fuel reduction projects. The plan identifies areas of the park where fuel reduction actions will occur during the first five years of implementation; the five-year program will be reviewed and updated annually to reflect areas that have been treated and add other areas where treatment is needed. As park managers implement the actions of the general management plan selected alternative, the fire management plan will require a review and possible refinement as resource and public issues change.

Golden Gate National Recreation Area – Park Asset Management Plan

The major goal of the *Park Asset Management Plan* is to articulate how the park currently maintains its assets and intends to in the future. This is accomplished through a review of how the park prioritizes its assets, bundles work orders into logical projects, estimates operating and maintenance requirements, demonstrates funding gaps, and identifies techniques to manage these funding gaps. The plan was used to help guide the development of the alternatives in the general management plan. Once the general management plan is approved, the *Park Asset Management Plan* will be updated to reflect the new management direction.

Marin Equestrian Stables Plan and Environmental Assessment

Golden Gate National Recreation Area is in the process of developing the *Marin Equestrian Plan*. The plan is focused on options for the future use of three Marin County stables within the park and will address site and facility needs, improvements, and protection of important resources at and surrounding these facilities. The plan will also identify and enhance the public outreach and equestrian program, identify best manage-

ment practices and sustainable programs, increase protection of natural resources, and preserve the cultural resources that surround the stables. The actions of the general management plan alternatives have been continuously reviewed as the *Marin Equestrian Plan* evolves in order to ensure consistency between the two planning efforts.

Current Plans for Other Park Areas not Included in the General Management Plan

Presidio General Management Plan Amendment and Environmental Impact Statement (1994)

The general management plan amendment guidance for Area A, managed by the National Park Service, provides for natural resource restoration, education, and outdoor recreation along the coastal areas of San Francisco Bay and the Pacific Ocean. Major sites within Area A include Crissy Field, Fort Point National Historic Site, Baker Beach, and Lobos Creek and dunes.

For Area A, the actions proposed in this general management plan are consistent with the amendment that covers management of the lands within the Presidio of San Francisco. For Area B, this plan is superseded by the *Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco* (2002).

Sutro Historic District Comprehensive Design and Environmental Assessment (1993)

The *Sutro Historic District Comprehensive Design and Environmental Assessment* provides management guidance for the landscape rehabilitation of the Adolph Sutro Historic District. The plan retains the historic character while making changes to the property for new uses and interpretation for park visitors. The National Park Service continues to manage the Sutro Historic District structures, landscape, and archeological sites, including Cliff House, Sutro Baths, and Sutro Heights Park. The landscape adjacent to the historic district includes the Lands End Lookout visitor center, trails, and parking, and the extended area is managed for natural and scenic values. The actions proposed in this general management plan recognize that the natural attributes and biotic systems of the larger surrounding park landscape contribute to the historical significance of the historic district. The alternatives are consistent with the environmental assessment.

Point Reyes National Seashore General Management Plan

A general management plan for the national seashore is being developed to put forth a strategy to meet several goals that promote leadership and innovation in facility management, research, protection and restoration of natural and cultural resources, sustainable resource use, wilderness awareness, and public outreach-partnerships.

Current Plans for Other Park Areas not Managed by the National Park Service Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco (2002)

The *Presidio Trust Management Plan (PTMP)* is an update of the 1994 General Management Plan Amendment for the portion of the Presidio transferred to the jurisdiction of the trust in 1998. The Trust Act directs the trust to manage Area B in accordance with the park purposes identified in the enabling legislation for Golden Gate National Recreation Area and the "general objectives" of the amendment. The latter were defined in Trust Board Resolution 99-11 ("General Objectives"). The *Presidio Trust Management Plan* provides an updated land use policy framework for Area B of the Presidio wholly consistent with the

amendment's general objectives, and which retains and builds on the amendment's policies and principles. Since the time the amendment was adopted and the Presidio Trust Act was enacted, key land use and financial conditions have changed. The *Presidio Trust Management Plan* took into account the new Trust Act requirements, conditions that had changed since the amendment was adopted, new policies and management approaches, and provide a level of flexibility not contemplated in the amendment. The *Presidio Trust Management Plan* describes the planning principles that help the trust realize its goals of preserving and enhancing park resources, bringing people to the park, and making the lands under trust jurisdiction financially self sufficient. The *Presidio Trust Management Plan* sets forth land-use preferences and development guidelines for each of its seven planning districts. The *Presidio Trust Management Plan* is the plan that the trust looks to in making management and implementation decisions in Area B that are consistent with the purposes of Golden Gate National Recreation Area enabling legislation and the general objectives of the amendment.

National Park Service Park Partner Plans

Headlands Center for the Arts Master Plan (1990)

The plan provides guidance for the rehabilitation and use of the historic Fort Barry for an art center. The alternatives in the general management plan are consistent with this plan.

Marine Mammal Center Site and Facilities Improvements Project Environmental Assessment and Finding of No Significant Impact (2004)

The environmental assessment presents and analyzes alternatives for the upgrade and expansion of the Marine Mammal Center's facilities. These improvements will better serve the center's existing programs for the treatment and rehabilitation of injured, ill, or orphaned marine mammals.

Based on the analysis provided in the environmental assessment, the implementation of mitigation measures, and with due consideration of the nature of public and agency comments, the National Park Service has determined that the selected alternative would not have the potential to significantly adversely affect the quality of the environment. A Finding of No Significant Impact was issued in October 2004. The actions of the general management plan alternatives are consistent with the decisions and actions of the Marine Mammal Center Site and Facilities Improvements Project.

Slide Ranch Master Plan and Environmental Assessment (1996)

A Master Plan and Environmental Assessment for the continuing use of Slide Ranch were approved and published in December, 1996. In the years since that approval, the design development process included extensive planning, engineering and review among the Slide Ranch project team, the National Park Service, the California Coastal Commission, and County of Marin.

Schematic designs were completed for all buildings in the master plan and infrastructure drawings were prepared for fire suppression, wastewater management, landscape and other aspects related to the development. A Design Development Submittal to the National Park Service prepared by Slide Ranch and its architects in July 2003, included technical reports for Phase One of the originally approved master plan.

Phase One includes construction of a 2,400 square foot teaching barn in a place that is most favorable with respect to geotechnical and septic system implementation. The

planned Green Barn includes an ADA-accessible restroom and program facilities.

The actions of the general management plan are consistent with the decisions and actions of the Slide Ranch Master Plan and Environmental Assessment.

Other Federal Plans

San Francisco Maritime National Historical Park General Management Plan (1997)

The *General Management Plan for San Francisco Maritime National Historical Park* guides the management of resources, visitor use, and general development at the park over the next 15 to 20 years. The national historical park shares a boundary with Golden Gate National Recreation Area and the actions of one park will influence the visitor and management activities of the other. In preparing the alternatives for this general management plan, the planning team coordinated with the staff of the national historical park to ensure consistencies with current management direction.

National Oceanic and Atmospheric Administration – Joint Management Plan for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries (2008)

The Office of National Marine Sanctuaries released final revised management plans, regulations, and a joint final environmental impact statement for the Cordell Bank, Gulf of the Farallones, and Monterey Bay national marine sanctuaries. These plans are the result of seven years of study, planning, and extensive public input. The management plans offer a vision and course for protecting the rich marine ecosystems of three California national marine sanctuaries while continuing to allow compatible, sustainable human uses. The plans include a review of resource protection, education and research programs, the program's resource and staffing needs, regulatory goals, and sanctuary boundaries.

The three sanctuaries include Pacific Ocean waters that extend from Bodega Bay in the north to Cambria in the south and thus could impact or be affected by the *Golden Gate National Recreation Area General Management Plan*. The three management plans were prepared jointly because the sanctuaries are adjacent to one another, managed by the same program, and share many of the same resources and issues as well as many overlapping interest and user groups. The alternatives in the general management plan are consistent with these plans and articulate additional NPS actions that strengthen ocean stewardship within the area of influence.

Natural Resource Trustee Agencies – Cosco Busan Oil Spill Final Damage Assessment and Restoration Plan (2012)

This interagency damage assessment and habitat restoration plan was developed by a group of state and federal agencies in response to the Cosco Busan oil spill that occurred in San Francisco Bay on November 7, 2007. The *Natural Resource Trustee Agencies* included the California Department of Fish and Game, the California State Lands Commission, the National Oceanic and Atmospheric Administration, the U.S. Fish and Wildlife Service, the National Park Service, and the Bureau of Land Management. In the document, the trustee agencies identified the effects of the spill and the habitat restoration projects that will be necessary to compensate for these impacts. The spill affected wildlife individuals (mainly birds and fish), aquatic and terrestrial habitat (intertidal, salt marsh, tidal flats, sandy beach, and eelgrass beds), and recreational activities. The identified projects include:

- creation of grebe nesting habitat at Tule Lake National Wildlife Refuge

- creation of over-wintering duck and grebe habitat at the South Bay Salt Ponds
- creation of nesting and roosting habitat for cormorants, pelicans, and shorebirds at the Berkeley Pier
- creation of nesting habitat for seabirds at the Farallon Islands
- creation of a grant project to benefit Surf Scoters
- restoration of Marbled Murrelets in California
- restoration of eelgrass at several sites inside the Bay, to benefit both eelgrass and herring
- restoration of sandy beach habitats at Muir Beach and Albany Beach
- restoration of salt marsh and mudflat habitats at Aramburu Island
- restoration of native oysters and rockweed at several sites inside the Bay, to benefit rocky intertidal communities
- creation of a process to fund a wide variety of human recreational use projects at impacted sites across the spill zone

State and Regional Plans

Association of Bay Area Governments: Bay Trail Plan

The Association of Bay Area Governments developed the *Bay Trail Plan* pursuant to California Senate Bill 100. The Bay Trail is to be a regional hiking and bicycling trail around the perimeter of the San Francisco and San Pablo bays. Senate Bill 100 mandates that the Bay Trail provide connections to existing park and recreation facilities, create links to existing and proposed transportation facilities, and avoid adverse effects on environmentally sensitive areas. All the alternatives in this general management plan are consistent with the purposes and objectives of the Bay Trail.

California Department of Parks and Recreation – Angel Island State Park Resource Management Plan / General Development Plan / Environmental Impact Report (1979)

This plan guides the responsible use and management of resources at Angel Island State Park. It outlines recommended actions to improve opportunities for passive recreation, boating experiences, and other appropriate forms of recreation. The alternatives in the general management plan are consistent with this plan.

California Department of Parks and Recreation – California Outdoor Recreation Plan (2002)

The *California Outdoor Recreation Plan* is the statewide master plan for parks, outdoor recreation, and open space for all recreation providers. The *California Outdoor Recreation Plan* provides policy guidance to all public agencies (federal, state, local, and special districts) engaged in providing outdoor recreational lands, facilities and services throughout the state. The plan includes five major goals: to provide a source of information; serve as an action guide; provide leadership; maintain funding eligibility for the Land and Water Conservation Fund; and provide project selection criteria for administering the Land and Water Conservation Fund grant program. A separate report, titled *Public Opinions and Attitudes on Outdoor Recreation in California 2002*, which is considered part of the *California Outdoor Recreation Plan*, establishes baseline information on outdoor recreation supply and demand. The alternatives in the general management plan are consistent with this plan.

California Department of Parks and Recreation – Gray Whale Cove State Beach General Plan Amendment (1984)

This amendment to the *San Mateo Coast Area General Plan* was approved to change the location of the proposed 200-car parking area for public beach access to Gray Whale Cove. The alternatives in the general management plan are consistent with this plan.

California Department of Parks and Recreation – Pacifica State Beach General Plan (1990)

This plan provides long-range development, management, and operational guidelines for Pacifica State Beach. The plan is comprised of seven elements: resource, land use, facilities, interpretive, operations, concessions, and environmental impact. The alternatives in the general management plan are consistent with this plan.

California Department of Parks and Recreation – Mount Tamalpais State Park General Plan (1980)

The purpose of this general plan is to provide general guidelines for the park's management and development in accordance with the unit's classification as a state park. Because the natural resources of Mount Tamalpais State Park make it unique, development and management should focus on the preservation, interpretation, and public use of its natural and scenic values. The specific goals of the plan are as follows:

- Identify the park's natural, cultural, and recreational resources.
- Establish policies for the management, protection, use, and interpretation of these resources.
- Identify existing and future problems and provide solutions.
- Determine visitor activities and land uses that are compatible with the purpose of the park, the preservation of resources, and the surrounding land uses.
- Determine the potential environmental impact of visitor activities, land use, and related development.
- Establish guidelines for the sequence of park development.
- Provide an informational document for the public, the legislature, park personnel, and other government agencies.

Caltrans District 4 Devil's Slide Project

Carved out of the steep cliff sides, Route 1 hugs the coastline for much of the distance between Pacifica and Montara. In one part, the road crosses the aptly named Devil's Slide region, a steep, unstable geological formation. This section of road has a long history of closure due to rockslides and land slippage. Following many years of public input and careful evaluation of alternatives, Devil's Slide will be bypassed by two inland tunnels, providing a safe, dependable highway between Pacifica and Montara. This is Caltrans' Devil's Slide Tunnel project. The bypassed section of Route 1, together with 70 acres of State right-of-way, will be closed to motor vehicles and made available as a multiuse Coastal Trail segment for public access and recreational use following the planned tunnel opening in 2011, with small trailhead parking lots at the north and south ends. This land was included in the 2005 boundary expansion, but is not anticipated to be acquired by the National Park Service at this time. Management of this site has been integrated into the planning process for the general management plan.

Coastal Conservancy – Completing the California Coastal Trail (2003)

Senate Bill 908, passed in 2001 by the California State Legislature, directed the

Coastal Conservancy to report on a proposed trail that would stretch 1,300 miles along the entire California coast. The report, completed in January 2003, analyzes the costs/benefits and opportunities and constraints of completing the trail, discuses signage and graphics standards, and outlines recommendations for statewide policy initiatives and local implementation projects.

The California Coastal Trail is a network of public trails for walkers, bikers, equestrians, wheelchair riders, and others along the entire California coastline. It is currently more than half complete. Coastwalk is a volunteer organization that advocates for completion of the trail. The California Coastal Trail is intended to provide "a continuous public right-of-way along the California coastline designed to foster appreciation and stewardship of the scenic and natural resources of the coast through hiking and other complementary modes of nonmotorized transportation." The Coastal Trail runs through parts of Golden Gate National Recreation Area and provides opportunities for connections to other trails within the study area. It is focused on enhancing public access to the coastal region and providing education to visitors. These goals are completely compatible with those of Golden Gate National Recreation Area, so there may be opportunities for efficiencies in providing access to national park lands along the coastline. The alternatives in the general management plan are consistent with this plan.

Greenbelt Alliance, Bay Area Open Space Council, Association of Bay Area Governments – Golden Lands, Golden Opportunity: Preserving Vital Bay Area Lands for all Californians (2008)

This initiative provides a statement of regional principles to ensure a healthy future for vital Bay Area lands and residents. The initiative identifies unprotected landscapes with significant value to the Bay Area and the state. It works to coordinate priorities among a variety of organizations working together. The park staff at Golden Gate National Recreation Area participated in the identification of unprotected landscapes. The alternatives in the general management plan incorporate potential actions that contribute to this regional effort and are consistent with this initiative.

San Francisco Bay Conservation and Development Commission. The San Francisco Bay Conservation and Development Commission is the regional planning authority in the San Francisco Bay area. The commission is authorized to control Bay filling and dredging and Bay-related shoreline development. Areas within the commission's jurisdiction include the San Francisco Bay, a shoreline band 100 feet inland of the Bay, and several other distinct features in the Bay area such as salt ponds and managed wetlands. Several commission plans affect development efforts along the Golden Gate National Recreation Area shoreline. The commission is the agency responsible for reviewing and approving Coastal Consistency Determinations under the Coastal Zone Management Act in the San Francisco Bay area.

San Francisco Bay Plan (2003)

This plan quantifies how the Bay Conservation and Development Commission proposes to reach its primary goal of developing the Bay and associated shoreline to its highest potential. The plan identifies priority use areas in the Bay, including ports, water-related industry, water-oriented recreation, airports, and wildlife refuges. The plan outlines the permitting policies and procedures for activities within priority and nonpriority use areas and how they will be granted.

San Francisco Bay Area Seaport Plan (2003)

The *Seaport Plan* is a second-tier document to Bay Conservation Development

Commission's *San Francisco Bay Plan*. It provides specific details about facilities identified as port priority use areas in the *Bay Plan*. The data includes exact boundaries of port priority use area, cargo forecasts, policies, and planned improvements, and the plan recommends changes/upgrades at specific ports and their terminals.

The alternatives are consistent with the above plans.

San Francisco Bay Area Water Transit Authority—Final Program Environmental Impact Report: Expansion of Ferry Transit Service in the San Francisco Bay Area (2003)

This document outlines a comprehensive strategy for expanding water transportation services in San Francisco Bay. The San Francisco Bay Area Water Transit Authority (Water Transit Authority) is a regional agency authorized by the state of California to operate a comprehensive San Francisco Bay Area public water transit system. The Water Transit Authority's goal over the next 20 years is to develop a reliable, convenient, flexible, and cost-effective water-transit system that will help reduce vehicle congestion and pollution in the Bay Area. In 2003 the Water Transit Authority plan was approved, and when fully implemented the Water Transit Authority estimates that by 2025 commuter-based ferry ridership will triple existing ridership and grow to approximately 12 million riders annually. The primary objectives of the Water Transit Authority plan include the following:

- Establish eight new ferry routes plus improved service on the existing ferry systems.
- Add an additional 31 new passenger ferries over the next 10 years.
- Acquire clean emission vessels.
- Provide convenient landside connections to terminals.
- Expand facilities at the San Francisco Ferry Building.
- Construct two spare vessels.
- Partner with Redwood City, Treasure Island, Antioch, Martinez, Hercules, and Moffett Field to continue planning their respective waterfronts.
- Pursue funding from federal and local sources.

Statewide Historic Preservation Plan for California, 2006–2010

The current *California Statewide Historic Preservation Plan for California, 2006–2010* was developed by the Office of Historic Preservation (OHP) .That office notes that it benefits from partnerships with stakeholders at federal, state, and local government levels and with numerous nonprofit and for-profit organizations who are working together to promote historic preservation. The plan highlights various areas that are relevant to the Golden Gate National Recreation Area and Muir Woods National Monument general management plan, including cultural landscapes, cultural diversity, heritage tourism, information management, outreach and education, and preservation archaeology. The National Park Service coordinates with the Office of Historic Preservation in a variety of ways, including participation in the California Cultural and Heritage Tourism Council. The existing plan is currently under revision and a new plan is anticipated in 2012.

Natural Resource Trustee Agencies – Cosco Busan Oil Spill Final Damage Assessment and Restoration Plan (2012)

See "Other Federal Plans" section above for a description of this interagency state and federal effort.

County and Local Plans

Central Marin Ferry Connection Project (2004)

The Central Marin Ferry Connection project calls for a new bicycle and pedestrian connection between East Sir Francis Drake Boulevard to the north and to the Redwood Highway and access roads in Corte Madera at Wornum Street and Redwood Highway to the south, thus connecting a gap in bicycle and pedestrian access in Central Marin County. Such a bike and pedestrian crossing would strengthen the interconnected bike network in Marin County, much of which leads to Golden Gate National Recreation Area sites. With such a connection, other weak points could be strengthened. With more bicycle access opportunities to Golden Gate National Recreation Area sites, more bicyclists will have an opportunity to visit. Increased bike access could also reduce vehicle traffic trying to access national recreation area sites.

Extension of San Francisco Municipal Railway's Historic Streetcar Environmental Impact Statement (Draft)

The Municipal Railway (Muni) currently operates historic streetcar service on Market Street and along the San Francisco waterfront (F-Line) to the line's existing terminus at Jones Street and Beach (in the Fisherman's Wharf area). The proposed extension (E-Line) would begin at the terminus of the F-Line and extend west to San Francisco Maritime National Historical Park and on to Fort Mason. The exact route has yet to be determined but would utilize either existing rail right-of-way routes confined to city streets or pass through San Francisco Maritime National Historical Park's Aquatic Park (at the core of the national historic landmark district) in order to reach the Fort Mason tunnel. It is anticipated that under all alternatives the railway line would extend through the tunnel and end in the area of Lower Fort Mason.

Fitzgerald Marine Reserve Master Plan (2002)

The James V. Fitzgerald Marine Reserve is a 402-acre natural resource area on the north coast of San Mateo County. The Reserve is under joint custodianship of the County of San Mateo Parks and Recreation Division and the California Department of Fish and Game. The Reserve extends 3 miles south from Point Montara to the south end of Pillar Point and 1,000 feet west into the ocean from the mean high tide line. Part of the Monterey Bay National Marine Sanctuary, the Reserve includes 370 acres of intertidal and subtidal marine habitat below the high tide line and 32 acres of upland coastal bluffs with elevations up to 100 feet. The intertidal zone, which contains rocky reefs at sea level and pocket beaches, is one of the most biodiverse intertidal regions in the state, renowned for its richness and diversity. Accessible at low tide, the reefs receive high levels of use because of their close proximity to the San Francisco Bay Area's dense population centers. The reefs within the reserve form 10 distinct areas, but are generally referred to as Moss Beach Reef to the north and Frenchman's Reef to the south.

The reserve is designated a Marine Life Refuge and an Area of Special Biological Significance by the State of California. The concept of "special biological significance" recognizes that certain biological communities, because of their value or fragility, deserve very special protection, consisting of preservation and maintenance of natural water quality conditions to the extent practicable.

The master plan has three main components: (1) Natural Resource Management Program, (2) Visitor Management Program, (3) Uses and Facilities Program. The following goals provide the foundation for the master plan concept:

- Preserve and enhance natural resources.
- Provide educational and interpretive opportunities.
- Ensure adequate and well-trained staff.
- Improve baseline information.
- Improve visitor management.
- Improve visitor facilities.
- Minimize impacts on neighbors.
- Protect cultural resources.
- Provide recreation opportunities.
- Seek funding opportunities.

The alternatives in the general management plan are consistent with the Fitzgerald Marine Reserve Master Plan.

Huddart and Wunderlch Parks Master Plan (2006)

This master plan presents a 20-year vision for the development, operation, and maintenance of Huddart and Wunderlich parks. More specifically, the master plan is intended to achieve the following goals:

- Continue to provide multiple recreational opportunities that are consistent with the regional nature of the parks and with protection of the environmental, cultural, and historic resources of the land.
- Concentrate development of new facilities in the previously developed portions of the parks. Protect the wild character of the undeveloped portions of the parks.
- Increase the revenue generation capability of each park.
- Identify physical improvements that will decrease ongoing operation and maintenance costs.
- Make public safety a top priority in ongoing park operations and maintenance, and in new improvement projects.
- Ensure the continued equestrian use of the parks.
- Improve vehicular and pedestrian circulation within each park.

The alternatives in the general management plan are consistent with the Huddart and Wunderlch Parks Master Plan.

Marin County Bicycle and Pedestrian Master Plan (2003)

The Marin County Congestion Management Agency commissioned a bicycle and pedestrian master plan to embrace both incorporated and unincorporated jurisdictions within the county. Key recommendations of this plan include a north-south bikeway, an east-west bikeway, potential use of abandoned railroad tunnels and rights-of-way, and positioning vital infrastructure improvements to promote and encourage increased bicycle and pedestrian activity.

Marin County Local Coastal Program Unit 1 (1979)

This document was prepared pursuant to the Coastal Act of 1976, which required all coastal jurisdictions to prepare a Local Coastal Program. A Local Coastal Program is "a local government's land use plans, zoning ordinances, zoning district maps, and implementing actions which, when taken together, meet the requirement of, and implement the provisions and policies" of the Coastal Act at the local level.

Marin Countywide Plan (2007) and Amended (2009)

The *Marin Countywide Plan* guides the conservation and development of Marin County. The countywide goals reflect core community values and identify what fundamental outcomes are desired.

- **A Preserved and Restored Natural Environment.** Marin watersheds, natural habitats, wildlife corridors, and open space will be protected, restored, and enhanced.
- **A Sustainable Agricultural Community.** Marin's working agricultural landscapes will be protected, and the agricultural community will remain viable and successfully produce and market a variety of healthy foods and products.
- **A High-Quality Built Environment.** Marin's community character, the architectural heritage of its downtowns and residential neighborhoods, and the vibrancy of its business and commercial centers will be preserved and enhanced.
- **More Affordable Housing.** Marin's members of the workforce, the elderly, and special needs groups will have increased opportunities to live in well-designed, socially and economically diverse affordable housing strategically located in mixed-use sites near employment or public transportation.
- **Less Traffic Congestion.** Marin community members will have access to flexible work schedules, carpools, and additional transportation choices for pedestrians, bicyclists, and transit users that reduce traffic congestion.
- **A Vibrant Economy.** Marin's targeted businesses will be clean, be prosperous, meet local residents' and regional needs, and provide equal access to meaningful employment, fair compensation, and a safe, decent workplace.
- **A Reduced Ecological Footprint**. Marin residents and businesses will increasingly use renewable energy, fuel efficient transportation choices, and green building and business practices similar to the level of Western Europe.
- **Collaboration and Partnerships.** Marin public agencies, private organizations, and regional partners will reach across jurisdictional boundaries to collaboratively plan for and meet community needs.
- **A Healthy and Safe Lifestyle.** Marin residents will have access to a proper diet, health care, and opportunities to exercise, and the community will maintain very low tobacco, alcohol, drug abuse, and crime rates.

The alternatives in this general management plan work to address many of the goals listed above including preserved natural environments, less traffic congestion, vibrant economy, reduced ecological footprint, collaboration, and healthy and safe lifestyles.

Midcoast Action Plan for Parks and Recreation: Planning Team Report (2007)

This plan, prepared by the Midcoast Recreation Planning Team, is an action plan for providing neighborhood and community recreation services and facilities on the Midcoast. The action plan outlines near and long-term objectives and a strategy for implementation. This plan focuses on actions that finally implement recommendations from three assessments conducted over the past 30 years beginning with the adopted *Midcoast Community Plan* from 1978. Preparation of this plan for a Midcoast park and recreation system also meets the *Shared Vision 2010 The Promise of the Peninsula* prepared by the County Board of Supervisors. Six commitments and 11 goals outlined in the county's shared vision are directly applicable to implementing a Midcoast park system. The alternatives in the general management plan are consistent with the planning team report.

City of Pacifica Point San Pedro Headlands Coastal Trail Connection

The City of Pacifica proposes to construct a multiuse Coastal Trail connection west of State Route 1 through this site prior to its transfer to Golden Gate National Recreation Area. This trail segment would connect with the future north trailhead and Coastal Trail on the abandoned State Route 1 segment that will become a multiuse trail when the Devil's Slide Tunnel Project is complete. The City of Pacifica has constructed paved multiuse paths along State Route 1, connecting, or with potential to expand and connect, to national recreation area sites.

San Francisco Public Utilities Commission (SFPUC) – Peninsula Watershed Management Plan (2001)

The Peninsula Watershed Management Plan provides a planning policy framework for the SFPUC for making future decisions about watershed land uses. The plan provides a comprehensive set of goals, policies, and management actions which integrate all watershed resources and reflect the unique qualities of the watersheds. In addition to serving as a long-term regulatory framework for decision making by the San Francisco Public Utilities Commission, the plan is also intended to be used as an implementation guide by the commission's Land and Resource Management Section staff. The plan provides the Land and Resource Management Section manager and staff with management actions designed to implement the established goals and policies for water quality, water supply, ecological and cultural resource protection, fire and safety management, watershed activities, public awareness, and revenue enhancement. The completion of the Fifield Cahill Ridge Trail, the highest trail priorities as set forth in the *Peninsula Watershed Management Plan* are: (1) to complete a connector trail from Sneath Lane to the North San Andreas Trail, (2) to build the southern extension of the Ridge Trail from Highway 92 south to the Kings Mountain Trail, and (3) to improve trails and connectors so that there is a continuous north-south public trail along the eastern edge of the watershed. While the *Peninsula Watershed Management Plan* includes policies to consider the addition of new trails and connectors in zones of less vulnerability and risk, the plan also includes policies to limit public trails to the periphery of the watershed to minimize adverse impacts (sensitive habitat and species, fire, spread of nonnative weed species, etc.) and a prohibition on the construction of new trails and unsupervised access to existing roads and trails not addressed in the plan.

PG&E Jefferson-Martin 230kV Transmission Line Proposed Settlement and Environmental Assessment (2004)

The project includes an assessment of construction of 24 miles of new 230 kV transmission line in San Mateo County (Jefferson-Martin 230kV Line). The project includes both overhead (3.3 miles) and underground segments (20 miles) within the Golden Gate National Recreation Area boundary and within easements managed by the National Park Service to protect the natural and scenic values. The approximately 24-mile route selected by the California Public Utilities Commission includes replacement of the existing double circuit 60kV line with a double circuit 60kV/230kV line along the same right-of-way, with minor modifications to reduce visibility of the rebuilt line. A final route for the line was approved by the California Public Utilities Commission in August 2004, which the National Park Service appealed. Pacific Gas and Electric has proposed a settlement to the National Park Service, which is the subject of the environmental assessment. The alternatives in the general management plan are consistent with this plan.

Regional Bicycle Plan for the San Francisco Bay Area (2001)

The Metropolitan Transportation Commission's *2001 Regional Bicycle Plan* is a component of the *2001 Regional Transportation Plan for the San Francisco Bay Area*, which establishes the region's 25-year transportation investment plan. The commission sought to develop a regional bicycle plan with the following five main objectives:

- Define a network of regionally significant bicycle routes, facilities, and necessary support programs and facilities.
- 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 bike network.
- Identify programs to help local jurisdictions become more bicycle-friendly.

The goal of the plan is to "ensure that bicycling is a convenient, safe, and practical means of transportation throughout the Bay Area for all Bay Area residents." The alternatives in the general management plan are consistent with this plan.

San Francisco General Plan (2004)

The city's general plan guides change and growth within the city to ensure that the qualities that make San Francisco unique are preserved and enhanced. The plan is the embodiment of the community's vision for the future of San Francisco.

The general plan is designed as a guide to the attainment of the following general goals:

- Protection, preservation, and enhancement of the economic, social, cultural, and aesthetic values that establish the desirable quality and unique character of the city.
- Help make the city more healthful, safe, pleasant, and satisfying, with housing representing good standards for all residents and adequate open spaces and appropriate community facilities.
- Improvement of the city as a place for commerce and industry by making it more efficient, orderly, and satisfactory for the production, exchange, and distribution of goods and services, with adequate space for each type of economic activity and improved facilities for the loading and movement of goods.
- Coordination of the varied pattern of land use with public and semipublic service facilities required for efficient functioning of the city, and for the convenience and well-being of its residents, workers, and visitors.
- Coordination of the varied pattern of land use with circulation routes and facilities required for the efficient movement of people and goods within the city and to and from the city.
- Coordination of the growth and development of the city with the growth and development of adjoining cities and counties and of the San Francisco Bay Region.

In addition, the *SUBAREA 3: Bay Street To The Municipal Pier* identifies Objective 3 to transform the area into an attractive gateway to the residential boulevard and a transition from Fisherman's Wharf and Golden Gate National Recreation Area. The following are the policies associated with this objective:

POLICY 3.1: Create a tree-lined and landscaped median strip within the Van Ness street space and plant rows of trees in the sidewalk space. This greenspace element, which would realign some existing parking

spaces, should be designed to "announce" the area's attractive shoreline open space resources and visually direct the visitor to them.

POLICY 3.2: Support National Park Service plans for improvements of the area within the boundaries of the Golden Gate National Recreation Area boundaries. The *Golden Gate National Recreation Area General Management Plan* calls for the following improvements:

> *All of the Van Ness Avenue (asphalt paving) inside the park boundary will be removed and replaced with landscaping. The Sea Scout clubhouse and maintenance docks will also be removed. The Sea Scouts' boats will be moved to the east side of the lagoon, and their programs and meetings will be held in the aquatic center. The food concession at the foot of Van Ness will receive a good sprucing-up. The Municipal Pier will also get a substantial cleanup and minor improvements such as fish-cleaning stations and restrooms. (It may also require structural renovation). Night lighting throughout the area will be upgraded.*

San Mateo County Comprehensive Bicycle Route Plan (2000)

The plan addresses issues of safety, access, quality of life, and the effective implementation of bikeways. Outlined in the plan are a detailed set of policies, goals, and objectives designed to be in concert with the county's and cities' general plans, the cities' bicycle plans, as well as other relevant regional plans. These policies address important issues related to San Mateo County's bikeways, such as planning, community involvement, use of existing resources, facility design, multimodal integration, safety and education, support facilities and programs, funding, implementation, and maintenance.

The short- to mid-term priority projects in the plan include the North-South Bikeway, the Colma-Millbrae Bikeway, the Ralston Bikeway, the North-South Bikeway (southern segment), the San Mateo County Bay Trail, the Recreational Route improvements, the North Coast Bikeway, the North-South Bikeway (Old County Road section), the Coastside Bicycle Projects, the Highway101 / Willow Road Interchange, the North-South Bikeway (Bayshore section), the Highway 101 / Broadway Interchange, the North-South Bikeway (Delaware / California section), the Crystal Springs / 3rd / 4th Avenue Bikeway, and the SFIA Bay Trail / Commuter Bikeway. The alternatives in the general management plan are consistent with this plan.

San Mateo County Trails Plan (2001)

This document is the 2001 update of the *San Mateo County Trails Plan*. Trails planning on a countywide level dates back nearly 25 years. The 2001 update is the third iteration of the *Trails Plan*. The *Trails Plan* is intended to fulfill the following objectives:

- Provide an updated *Trails Plan wit*h the latest desired alignments.
- Link trails among existing and proposed trails in San Mateo County cities and parks, and to adjacent counties.
- Develop a set of policies and guidelines that can be used during detailed trail planning to ensure that adequate trails are constructed within constraints presented by the environment.
- Provide a plan for access for recreational and educational purposes to portions of the county where no access currently is available.
- Improve access to and along the coast.
- Provide recreational opportunities to area residents.

- Provide commuter routes for alternative types of transportation (e.g., bicycles).

Some of the projected trails, such as the Bay Area Ridge Trail, could pass through or connect with trails in Golden Gate National Recreation Area. The alternatives in the general management plan are consistent with this plan.

San Mateo Countywide Transportation 2010 Plan (2001)

This transportation plan serves as a plan

- for all modes (roads, Caltrain, SamTrans, BART, bicycles) and that looks at all modes as systems
- that advocates policy, not projects; it is not a capital improvement program
- whose policy is derived from understanding the relational interaction between the modes
- that strives for synergy among the parts of the transportation system—the whole is greater than the sum of the parts
- that seeks to develop the parts of the system to the optimal size, rather than the maximum
- that provides critical information to help make informed decisions
- that recognizes the decentralized, fragmented, and complex decision-making structures of transportation planning in the county
- that seeks to coordinate decision making, relying on cooperation and not enforcement

The goals of this plan are to reduce traffic congestion in San Mateo County, improve mobility, reduce congestion, increase access, improve air quality, increase economic vitality, improve the coordination of land use and transportation planning, increase reliability, and increase safety. The objectives are to increase capacity and performance (safety, reliability, convenience) of all transportation systems, increase demand for transit travel, and decrease demand for automobile travel, especially single-occupant.

The strategy is to alleviate congestion via the following:

- Roads – increase the efficiency of the existing highway system.
- Transit – increase capacity, service levels, and safety of transit systems.
- Land Use – increase supply and density of housing and employment in transit corridors.
- Transportation Systems Management – increase programs to reduce the demand for single-occupant automobile travel.
- Pricing – initiate modest pricing programs that cause a shift from automobile to transit travel.

The alternatives in the general management plan are mindful of the goals and objectives of this plan. As more specific implementation plans are developed for park sites in San Mateo, the park staff will coordinate with the county to help achieve the transportation plan's goals and objectives.

San Pedro Valley County Park

Sausalito General Plan (1995)

The following 10 broad goals serve as the basis for more specific policies and implementation strategies. The overriding theme of the *Sausalito General Plan* is to protect the existing character, unique features, and quality of life in Sausalito. Goals of the plan are as follows:

- Protect and enhance Sausalito as a residential community.

- Protect the present character of Sausalito's residential neighborhoods.
- Encourage commercial services that serve city residents.
- Recognize the importance of the downtown commercial district to the economic viability of the community and provide amenities for Sausalito's visitors.
- Preserve the open waterfront as a natural resource and promote maritime uses in the Marinship.
- Preserve the historical character of Sausalito and its architectural and cultural diversity.
- Protect the scenic qualities and the natural environment of the city.
- Protect residents from natural and manmade hazards and avoid exposure to unnecessary risks to community safety.
- Preserve and provide a variety of housing opportunities in keeping with Sausalito's tradition of diversity.
- Maintain an appropriate level of public services.

The alternatives in the general management plan are consistent with this plan

APPENDIX C:
RELEVANT NPS POLICIES

This section describes the National Park Service management policies most relevant to Golden Gate National Recreation Area and Muir Woods National Monument. They guided development of this general management plan; these policies will continue to guide management of the park into the future, regardless of the alternative that is selected. They guide actions taken by the National Park Service on such topics as natural and cultural resource management, park facilities, and visitor use management. This section includes descriptions of the broad management goals consistent with all alternatives and a set of strategies that may be used by park managers to achieve those goals. This is not an exhaustive list of strategies. As new ideas, technologies, and opportunities arise, they will be considered if they further support the desired condition.

FOUNDATION

Beginning with Yellowstone, the idea of a national park was an American invention of historic consequences. The areas that now make up the national park system, and those that will be added in years to come, are cumulative expressions of a single national heritage. The National Park Service must manage park resources and values in such manner and by such means as will leave them unimpaired for the enjoyment of future generations

RELATIONS WITH AMERICAN INDIAN TRIBES

The park works to ensure that traditional American Indian ties to the park are recognized; the National Park Service also strives to maintain positive, productive, government-to-government relationships with tribes culturally affiliated with the park. The rights, viewpoints, and needs of tribes are respected, and issues that arise are promptly addressed. American Indian values are considered in the management and operation of the park.

Strategies

- To ensure productive, collaborative working relationships, consult regularly and maintain government-to-government relations with federally recognized tribes that have traditional ties to resources in the park.
- Continue to identify and deepen the understanding of the significance of the park's resources and landscapes to American Indian people through collaborative research.
- Protect and preserve sites and resources that are significant to federally recognized tribes.
- Create opportunities for and invite the participation of tribes in protecting natural and cultural resources of interest within the park.
- Support the continuation of traditional American Indian activities in the park to the extent allowed by law and policy.
- Work with tribes to conduct ethnographic studies that identify culturally significant resources.
- Seek input from tribes during development of interpretive programs that relate to American Indians.
- Consult with American Indians under the Native American Graves Protection and Repatriation Act of 1990 for actions that affect or have the

potential to affect burial remains or items of sacred or ceremonial significance.

Park System Planning

Park planning helps define the set of resource conditions, visitor experiences, and management actions that, taken as a whole, will best achieve the mandate to preserve resources unimpaired for the enjoyment of present and future generations. NPS planning processes will flow from broad-scale general management planning through progressively more specific strategic planning, implementation planning, and annual performance planning and reporting, all of which will be grounded in foundation statements.

RELATIONSHIPS WITH PRIVATE AND PUBLIC ORGANIZATIONS, ADJACENT LANDOWNERS, AND GOVERNMENT AGENCIES

The park is managed holistically, as part of a greater ecological, social, economic, and cultural system. Positive relations are maintained with inholders (those owning property within the park boundary), adjacent landowners, surrounding communities, and private and public groups that affect, and are affected by the park. The park is managed proactively to ensure that NPS values are effectively communicated and understood.

Strategies

- Continue to establish and foster partnerships with public and private landowners.
- Foster a spirit of cooperation with neighbors, and encourage compatible uses of adjacent lands. Keep landowners, land managers, tribes, local governments, nongovernmental organizations, and the public informed about park management activities and issues. Consult periodically with landowners and communities that are affected by or potentially affected by park visitors and management actions.
- Work closely with local, state, and federal agencies and tribal governments whose programs affect or are affected by activities in the park.
- Continue to support and encourage volunteers who contribute to park programs.

RESEARCH

The National Park Service works with partners to learn about natural and cultural resources and associated values. Research priorities for the national recreation area are aligned with its purpose, significance, and fundamental resources and values.

Strategies

- Encourage and support basic and applied research through various partnerships and agreements to enhance understanding of resources and processes or to answer specific management questions.
- Mitigate impacts of research conducted on natural and cultural resources, as needed to preserve those resources for future generations to enjoy and study.
- Develop and implement criteria to determine whether requested research supports park purpose and significance, or other park goals.
- Develop and update lists of research issues that are important to the park.

LAND PROTECTION

The National Park Service will use all available authorities to protect lands and resources within units of the national park system, and the National Park Service will seek to acquire nonfederal lands and interests in land that have been identified for acquisition as promptly as possible. For lands not in federal ownership, both those that have been identified for acquisition and other nonfederally owned lands within a park unit's authorized boundaries, the Park Service will cooperate with federal agencies; tribal, state, and local governments; nonprofit organizations; and property owners to provide appropriate protection measures. Cooperation with these entities will also be pursued, and other available land protection tools will be employed when threats to resources originate outside boundaries.

Park staff will work with government agencies and nongovernmental organizations to support efforts to protect adjacent lands that are important to preserving the resources within the park.

Strategies

- Use various techniques to protect park values, including general agreements, acquisition of conservation and access easements, land exchanges, donations, and fee-simple acquisition.
- Carefully site any new telecommunication structures so as to not jeopardize the park's purpose, significance, and fundamental resources and values; also consider the park's management zones. Permit new rights-of-way only with specific statutory authority and approval by NPS managers, and only if there is no practicable alternative to such use of national park system lands.
- Continue to support the efforts of others to protect adjacent lands that are important to preserving park resources through appropriate planning, zoning, and other protection methods.

NATURAL RESOURCE MANAGEMENT

The National Park Service will preserve the natural resources, processes, systems, and values of units of the national park system in an unimpaired condition, to perpetuate their inherent integrity and to provide present and future generations with the opportunity to enjoy them.

The resources and processes of the park retain a significant degree of ecological integrity. Natural wind and water processes function as unimpeded as possible. Management decisions about natural resources are based on scholarly and scientific information and on the park's identified fundamental resources and values. Park resources and values are protected through collaborative efforts with neighbors and partners. Visitors and employees recognize and understand the value of the park's natural resources. Human impacts on resources are monitored, and harmful effects are minimized, mitigated, or eliminated.

Biologically diverse native communities are protected and restored when possible. Particularly sensitive communities are closely monitored and protected. Endemic species and habitats are fully protected; nonnative species are controlled, and native species are reintroduced when conditions allow. Genetic integrity of native species is protected. Threatened and endangered species are protected to the greatest extent possible and are generally stable or improving. Natural fire regimes are investigated and supported where possible.

Strategies

- Continue to inventory biotic and abiotic resources in the park and assess their status and trends.
- Continue long-term systematic monitoring of resources and processes to detect natural and human-caused trends, document changes in species or communities, evaluate the effectiveness of management plans and restoration projects, and mitigate impacts where possible.
- Implement and keep current a cooperative wildland fire management plan that includes interagency participation to maintain conditions within the natural range as much as possible.
- Work in consultation with American Indian tribes to identify, evaluate, and determine appropriate treatment for natural resources used by American Indians in park lands.
- Provide information to adjacent homeowners and private landowners on natural processes, wildlife, critical habitats, and threats to resources.
- Conserve and restore habitats for threatened and endangered species and species of special concern.
- In conjunction with other NPS offices, continue to expand the park's data management systems for analyzing, modeling, predicting, and testing trends in resource conditions.
- Continue to regularly update the park's resource stewardship strategy.
- Apply mitigation techniques to minimize impacts of construction and other activities on park resources.
- Continue to educate staff, visitors, and the public about the significance of natural resources and major threats to these resources.

ECOSYSTEM MANAGEMENT

Park management demonstrates leadership in resource stewardship and conservation of ecosystem values. The marine, forests, and aquatic systems are managed from an ecosystem perspective, considering both internal and external factors affecting visitor use, environmental quality, and resource stewardship. Management decisions about ecosystems are based on scholarly and scientific information. Resources and visitation are managed in consideration of the ecological and social conditions of the park and surrounding area. The National Park Service adapts management strategies to changing ecological and social conditions and are partners in regional land planning and management.

Strategies

- Continue to participate in and encourage ongoing partnerships with local, state, and federal agencies, and nongovernmental organizations in programs that have importance within and beyond park boundaries. Partnerships important to the long-term viability of critical natural resources include the following:
  - monitoring water quality of local water bodies
  - managing wildlife across human-created boundaries (such as jurisdictions, property lines, and fences)
  - managing nonnative invasive species
  - managing wildland fire
- Central to ecosystem management is long-term monitoring of changes in the condition of cultural and natural resources and related human influences. Improvement or degradation of resources and visitor experience cannot be determined with any certainty without a monitoring program. To protect, restore, and enhance park resources

and to sustain visitor use and enjoyment within and around the park, NPS staff would do the following:

  - Initiate or continue long-term monitoring of resources and visitor use, including use of the visitor experience and resource protection framework or other user capacity process, as appropriate.
  - Promote research to increase understanding of park resources, natural processes, and human interactions with the environment, with emphasis on fundamental resources and values.
  - Practice science-based decision making and adaptive management, incorporating the results of resource monitoring and research into NPS operations.
  - Identify lands/waters outside the park where ecological processes and human use affect park resources or are closely related to park resource management considerations; initiate joint research, monitoring, management actions, agreements, or partnerships to promote resource conservation.
  - Provide education and outreach programs to highlight conservation and management issues facing the park and related lands and encourage partners who are able to assist with ecosystem stewardship.
- Continue the disturbed site restoration program.
- Strive to control invasive nonnative species in coordination with adjacent landowners, other agencies, and NPS staff specialists; consider control of native species that threaten ecosystem health.

BIOLOGICAL RESOURCES MANAGEMENT

Wildlife

Natural wildlife populations and systems are understood and perpetuated. Natural fluctuations in populations are permitted to occur to the greatest extent possible. Natural influences are mimicked if necessary. The park staff would work with neighbors and partners to achieve mutually beneficial goals related to wildlife.

Strategies

- Continue cooperative management of threatened or endangered species within the park to stabilize or improve the status of these species.
- Strive to identify species that have occupied the park in the past, and evaluate the feasibility and advisability of reintroducing extirpated species.
- Continue to cooperate with the federal and state agencies to better understand populations and determine appropriate management actions for wildlife species.

Water Resources

Water quality is a key resource at the park. The need for adequate freshwater flows and high water quality are important in the preservation of the numerous rare and endangered species. The water resources have many beneficial uses including water contact and non-water contact recreation, fish migration and spawning, and municipal water supply. Groundwater is important for recharge of surface water systems, including wetlands, supporting rare and endangered species habitat and as a source for municipal and agricultural water supplies. Wetlands protect water quality, mitigate flood and drought, help control erosion, and facilitate groundwater recharge. Wetlands support

complex food webs, housing a rich biodiversity of wetland-endemic species, providing habitat functions for many aquatic and terrestrial species. The intertidal and subtidal zone of the park's littoral environments are some of the most diverse and productive ecosystems in the world. Coastal habitats are important for the preservation of several rare and endangered species.

Strategies

- Continue to monitor water quality and quantity within a local and regional context, and expand monitoring as needed to more fully understand the status and trends of ground and surface water.
- Participate in local, state, and national water quality remediation and watershed planning programs.
- Update strategies for water resources management as needed to reflect changing resources and management issues.
- Continue to inventory wetlands so that important wetland communities can be identified and protected.
- Continue to identify and address threats to wetlands, such as purple loosestrife and other nonnative species.
- Continue to assess human-related threats to water quality and quantity. Continue to monitor E. coli at designated recreational beaches.

Air Quality: The park is in a class II air quality area under the Clean Air Act. This designation allows for limited amounts of new air emissions. The air quality of the park is enhanced as the National Park Service continues to pursue actions that provide for reduction of emissions caused by park operations and visitation.

Strategies

- Continue to monitor and record air pollution levels and analyze changes over time.
- Monitor and reduce emissions, when possible, from activities within the park's boundaries.
- Continue to participate in regional air quality planning, research, and implementation of air quality standards.

Soundscape Management

Natural soundscapes are preserved, and sounds of modern society are minimized. Visitors have opportunities in most parts of the park to hear natural sounds.

Strategies

- Strive to collect baseline data on park soundscapes to understand characteristics and trends in natural soundscapes.
- Continue to control existing and potential land-based noise sources.
- Enforce existing noise regulations.
- Require bus tour companies to comply with regulations that reduce noise levels (e.g., turning off engines when buses are parked).
- Limit use of generators.
- Work with the Federal Aviation Administration, commercial businesses, and general aviation entities to minimize noise and visual impacts of aircraft on the park. Continue to discourage pilots of conventional aircraft from flying low along the park. If demand for commercial air tours develops, develop a commercial air tour management plan to address tours and their effects on the park.

- Minimize noise generated by the NPS use of noise-producing machinery such as motorized equipment. Consider noise potential when procuring and using park equipment.

Lightscape Management

The naturally dark night sky is preserved. Artificial light sources in and outside the park do not hinder opportunities to see the moon, stars, planets, and other celestial features. Park staff and partners continue to work with local communities to encourage protection of the night sky. To the greatest extent possible, the National Park Service works within a regional context to protect the quality of the night sky and the experience thereof.

Strategies

- Establish baseline data for the dark night sky through NPS programs.
- Determine if light sources in the park exceed appropriate levels. Study and implement ways to reduce or minimize artificial and unnecessary light.

CULTURAL RESOURCES MANAGEMENT

The NPS will preserve and foster appreciation of the cultural resources in its custody, and will demonstrate its respect for the peoples traditionally associated with those resources, through appropriate programs of research, planning, and stewardship.

General

Cultural resources are identified, evaluated, managed, and protected within their broader context. Management decisions about cultural resources are based on scholarly research and scientific information, fundamental resources and values, and consultation with the California state historic preservation officer and with American Indian tribes, as appropriate. The historic integrity of properties listed in (or eligible for listing in) the National Register of Historic Places is protected. Visitors and employees recognize and understand the value of the park's cultural resources. Human and natural impacts on cultural resources are monitored, and adverse effects are minimized or eliminated.

Strategies

- Continue to collect information to fill gaps in the knowledge and understanding of the park's cultural resources, to assess status and trends, and to effectively protect and manage cultural resources.
- In accordance with the National Historic Preservation Act of 1966, as amended, continue to locate, identify, and evaluate cultural resources to determine if they are eligible for listing in the National Register of Historic Places (national register).
- Prepare and update national register nominations as appropriate.
- Update and keep current the park's Cultural Landscape Inventory and List of Classified Structures (the NPS inventory of evaluated historic and precontact structures that have historical, architectural, and/or engineering significance).
- Work in consultation with the California state historic preservation officer, American Indian tribes as appropriate, and other interested parties to identify, evaluate, and determine appropriate treatment for archeological resources, historic structures, and cultural landscapes throughout the park.
- Conduct scholarly research and use the best available scientific

information and technology for making decisions about management of the park's cultural resources.

- Build a partnership program that considers appropriate adaptive use to assist in maintaining historic buildings and cultural landscapes throughout the park.
- Continue to initiate and regularly update plans and prioritize actions needed to protect cultural resources.
- Continue to research, document, catalogue, exhibit, and store the park's museum collection according to NPS standards.
- Continue to educate staff, visitors, and the public about cultural and historic issues relating to the park.
- Treat all cultural resources as eligible for the national register pending formal determination.

Archeological Resources: Archeological resources in the park are identified and preserved. Archeological resources are the remains of past human activity and records documenting the scientific analysis of these remains. Archeological features are typically buried, but may extend aboveground. Although archeological resources are commonly associated with precontact peoples, they may be products of more contemporary society.

Strategies

- Conduct sufficient research to identify and evaluate park archeological resources and assess condition and potential threats.
- Continue long-term monitoring of archeological sites to measure deterioration from natural and human sources and to evaluate the effectiveness of management actions to protect resources and mitigate impacts.
- Preserve and protect archeological resources by eliminating and avoiding natural and human impacts, stabilizing sites and structures, monitoring conditions, and enforcing protective laws and regulations.
- Carry out required consultation and legal compliance, and consider concerns raised.
- Include information about archeological resources, as appropriate, in interpretive and educational programs for the public.

Cultural Landscapes: The park's cultural landscapes are preserved in good condition to retain a high degree of integrity. Cultural landscapes reflect human adaptation and use of natural resources and are often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built.

Strategies

- Prepare cultural landscape inventories and reports, and amend existing reports as needed.
- Monitor, inspect, and manage identified and evaluated cultural landscapes to enable long-term preservation of historic features, qualities, and materials.
- Implement actions identified in cultural landscape reports, and add a record of treatment to the reports.
- Create design guidelines and/or cultural landscape reports for specific developed areas in the park to preserve landscape-defining features. Include provisions in the guidelines for design review to ensure the compatibility of new planning, design, and construction.
- Have cultural landscape specialists (e.g., historical landscape architects) prepare plans and specifications for

preservation, rehabilitation, and restoration, in consultation with the park's Natural Resources Division staff.

Ethnographic Resources: Ethnographic resources, the cultural and natural features of a park that are of traditional significance to traditionally associated peoples, are identified and protected to the fullest extent possible. These resources may be objects, beliefs, or places, and may have attributes that are of great importance to the group but not necessarily associated with the reason the park was established or appropriate as a topic of park interpretation.

Strategies

- Identify and document, through studies and consultations, ethnographic resources, traditionally associated people and other affected groups, and such groups' cultural affiliations to park resources.
- Recognize the sensitivity of ethnographic resources and associated data and provide confidentiality to the extent possible under the law.
- Have researchers formally collaborate with traditional cultural experts to develop a park strategy for dealing with ethnographic resources
- Monitor effects of use on ethnographic resources and effects of park plans on authorized uses and traditional users.

Historic Structures: The character of historic structures is preserved in good condition to retain a high degree of integrity. Whenever possible, adaptive use of historic structures for park needs is considered before building new infrastructure.

Strategies

- Prepare historic structure inventories and reports, and amend them as needed. Implement actions identified in historic structure reports and add a record of treatment to the reports.
- Prepare and update national register nominations as appropriate.
- Monitor, inspect, and manage identified and evaluated historic structures to enable long-term preservation of historic features, qualities, and materials.
- Use historic structures as they were historically used, or adaptively use them in ways that are compatible with park purpose and that maximize retention of historic materials, features, spaces, and spatial relationships.
- Consider historic buildings for appropriate adaptive use by other public and private entities to assist in preservation of the structures.
- Create design guidelines and/or historic structure reports for specific areas in the park to preserve architectural and character-defining features. Include provisions for design review to ensure the compatibility of new planning, design, and construction.
- Aggressively pursue basic preservation maintenance activities to maintain historic materials in good condition.
- Monitor and regulate use impacts on minimize both immediate and long-term damage to structures.
- Involve historical architects and other professionals in work that could affect historic structures.

USE OF THE PARK

> *National parks belong to all Americans, and the National Park Service will welcome all Americans to experience their parks. The Service will focus special attention on visitor enjoyment of the parks while recognizing that the NPS mission is to conserve unimpaired each park's natural and cultural resources and values for the enjoyment, education, and inspiration of present and future generations. The Service will also welcome international visitors, in keeping with its commitment to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout the world.*

Visitors from diverse backgrounds can experience a range of opportunities consistent with the purpose, significance, and fundamental resources and values of the park. Most visitors understand and appreciate the purpose and significance of the park and value their stewardship role in preserving natural and cultural features. They actively contribute to the park's preservation through appropriate use and behavior. Park programs and services are accessible to all, and conflicts between different user groups are minimized.

Visitor use levels and activities are consistent with preserving park purpose, significance, and fundamental resources and values, and with providing opportunities for recreation, education, and inspiration. Management decisions are based on scholarly and scientific information. When such information is lacking, managers make decisions based on the best available information, adapting as new information becomes available. Regional recreational opportunities continue to be coordinated among agencies for public benefit and ease of use.

Strategies

- Work toward providing programs and facilities that are effective in reaching and serving diverse communities.
- Collect data over time to monitor visitor experiences as part of an overall effort to protect desired resource conditions and visitor experiences.
- Address threats to resources and visitor experience by means other than limiting or restricting use (e.g., through education programs). If necessary, however, implement more restrictive methods.
- Base restrictions on visitor use on a determination by the park superintendent that such measures are consistent with the park's enabling legislation and NPS policies, are necessary to prevent degradation of the purposes and values for which the park was established, will minimize visitor use conflicts, or will provide opportunities for quality visitor experiences.

INTERPRETATION AND EDUCATION

> *Through interpretive and educational programs, the NPS will instill in park visitors an understanding, appreciation, and enjoyment of the significance of parks and their resources. Interpretive and educational programs will encourage the development of a personal stewardship ethic, and broaden public support for preserving park resources.*

Interpretive and educational services/programs at the park facilitate intellectual and emotional connections between visitors and park resources, foster understanding of park resources and resource stewardship, and build a local and

national constituency. Outreach programs through schools, organizations, and partnerships build connections to the park. Curriculum and place-based education inspire student understanding and resource stewardship. Visitors receive adequate information to orient themselves to the park and possible opportunities for a safe and enjoyable visit.

Strategies

- Develop and implement a comprehensive interpretive plan, with emphasis on providing information, orientation, and interpretive services in the most effective manner possible. Use both personal services (involving authorized staff) and nonpersonal services (including state-of-the-art technologies) as appropriate.
- Stay informed of changing visitor demographics and preferences to effectively tailor programs for visitors. Develop interpretive media supportive of park purpose, significance, interpretive themes, and fundamental resources and values.
- Continue to promote improved pre-trip planning information and orientation for park visitors through the park's website and other media. Work with local communities and other entities to provide services outside park boundaries, where appropriate.
- Cooperate with partners, other governmental agencies, educational institutions, and other organizations to enrich interpretive and educational opportunities locally, regionally, and nationally.
- Create and implement an education strategy plan, which outlines goals and actions for providing curriculum and place-based education programs.
- Continue to regularly update plans and prioritize actions needed to serve visitors and provide effective interpretation.
- Continue to educate staff, visitors, and the public about park interpretation/education programs.

PARK FACILITIES

The National Park Service will provide visitor and administrative facilities that are necessary, appropriate, and consistent with the conservation of park resources and values. Facilities will be harmonious with park resources, compatible with natural processes, esthetically pleasing, functional, energy- and water-efficient, cost-effective, universally designed, and as welcoming as possible to all segments of the population. NPS facilities and operations will demonstrate environmental leadership by incorporating sustainable practices to the maximum extent practicable in planning, design, siting, construction, and maintenance.

General: Park facilities and related development are the minimum necessary to serve visitor needs and protect park resources. Visitor and administrative facilities are as compatible as possible with natural processes and surrounding landscapes, aesthetically pleasing, and functional. Historic structures and properties are adaptively used when practicable and appropriate. Staff housing is sufficient to ensure an adequate level of protection for park resources, visitors, employees, and government property, and to provide necessary services. Adequate response (equipment and people) for visitor, resource, and facility protection; search-and-rescue; fire management; and safety is available. Decisions regarding park operations, facilities management, and development at the park from initial concept through design

and construction reflect principles of resource conservation and sustainability.

Strategies

- Build, locate, and/or modify facilities according to the *Guiding Principles of Sustainable Design* (NPS 1993) or similar guidelines. Establish architectural guidelines to ensure sustainability and compatibility with the natural and cultural environment. Properly maintain and upgrade existing facilities using sustainability principles, where possible, to serve the park mission.
- Consider the availability of existing or planned facilities in nearby communities and on adjacent lands, as well as the possibility of joint facilities with other agencies, when deciding whether to pursue new developments in the park. This will ensure that any additional facilities in the park are necessary, appropriate, and cost-effective.
- Integrate NPS asset management practices into decision making and planning. Build, modify, and/or maintain facilities according to projected funding levels and defined park priorities. Consider removal of facilities that do not meet minimum NPS criteria or are not cost-effective to maintain.
- Continue to strive to provide affordable housing within the park for emergency response staff, seasonal and entry-level employees, volunteers, and to support other park needs (housing for researchers, etc.)
- Provide commercial visitor services (for example services provided through concessioners) that are necessary and appropriate for visitor use and enjoyment through the use of concession contracts and commercial use authorizations. Ensure that concession operations are consistent with the protection of park resources and values and demonstrate sound environmental management and stewardship.

ACCESSIBILITY

New and renovated facilities are designed and constructed to be universally accessible in accordance with section 504 of the Rehabilitation Act of 1973 as amended, section 508 of the Rehabilitation Act, and the Architectural Barriers Act Accessibility Standards (2006). The National Park Service also has Director's Order 42: *Accessibility for Visitors with Disabilities in National Park Service Programs and Services* and Director's Order 16A: *Reasonable Accommodation for Applicants and Employees with Disabilities*. Visitors with disabilities have opportunities to experience the park open spaces, waters, historic structures, and cultural landscapes, and to enjoy representative portions of the backcountry.

Strategies

- Identify and modify existing facilities to meet accessibility standards as funding permits, or as facilities are replaced or rehabilitated. Design new facilities to meet current Architectural Barriers Act Accessibility standards.
- Provide public information about ease or difficulty of access for various facilities and trails.
- Periodically consult with public interests groups and people with disabilities or their representatives to increase awareness of the needs of people with disabilities and to determine how to make the park more accessible for everyone.
- Develop park interpretive programs per accessibility standards and the needs of people with disabilities.

APPENDIX D:
TABLE OF SPECIAL STATUS SPECIES
(INCLUDING THREATENED AND ENDANGERED SPECIES AND CANDIDATE SPECIES)

Common Name of Listed Species	Scientific Name	Retained for Impact Analysis	Designated Status[a]		Counties with Habitat in Planning Area[b]
			Federal	State	
Invertebrates					
bay checkerspot butterfly	*Euphydryas editha bayensis*		T, X	-	SM
black abalone	*Haliotes cracherodii*		E	-	M, SF, SM
mission blue butterfly	*Icaricia icarioides missionensis*	☐	E	-	M, SM
San Bruno elfin butterfly	*Incisalia mossii bayensis*	☐	E	-	SM
Myrtle's silverspot butterfly	*Speyeria zerene myrtleas*		E	-	M*, SM
California freshwater shrimp	*Syncaria pacifica*		E	E	M*
Fish					
green sturgeon	*Acipenser medirostris*		T, X	-	M, SF
tidewater goby	*Eucyclogobius newberryi*	☐	E, X	-	M, SM
coho salmon (central California coast Evolutionarily Significant Unit)	*Oncorhynchus kisutch*	☐	E, X	E	M, SM
steelhead trout (central California coast Evolutionarily Significant Unit)	*Oncorhynchus mykiss*	☐	T, X	-	M, SF, SM
steelhead trout (central valley Evolutionarily Significant Unit)	*Oncorhynchus mykiss*	☐	T, X	-	M, SF
Chinook salmon (California coastal Evolutionarily Significant Unit)	*Oncorhynchus tshawytscha*		T, X	-	M
Chinook salmon (central valley spring run)	*Oncorhynchus tshawytscha*		T, X	T	M, SF
Chinook salmon (Sacramento River winter run)	*Oncorhynchus tshawytscha*		E, X	E	M, SF
Amphibians					
California tiger salamander (Sonoma)	*Ambystoma californiense*		E	T	M, SM

Common Name of Listed Species	Scientific Name	Retained for Impact Analysis	Designated Status[a]		Counties with Habitat in Planning Area[b]
			Federal	State	
California red-legged frog	*Rana draytonii*	☐	T,X	-	M, SF, SM
Reptiles					
loggerhead turtle	*Caretta caretta*		T	-	M, SF, SM
green turtle	*Chelonia mydas*		T	-	M, SF, SM
leatherback turtle	*Dermochelys coriacea*		E, PX	-	M, SF, SM
olive ridley sea turtle	*Lepidochelys olivacea*		T	-	M, SF, SM
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	☐	E	E	SM
Birds					
marbled murrelet	*Brachyramphus marmoratus*		T,X	E	M, SF, SM
western snowy plover	*Charadrius alexandrinus nivosus*	☐	T	-	M, SF, SM
little willow flycatcher	*Empidonax trailii brewsteri*		SC	E	M, SF, SM
peregrine falcon	*Falco peregrinus anatum*		Delisted; monitored until 2015		M, SF, SM
bald eagle	*Haliaeetus leucocephalus*		Delisted; monitored until 2028	E	M, SF, SM
California black rail	*Laterallus jamaicensis coturniculus*		SC	T	M, SM
California clapper rail	*Rallus longirostris obsoletus*		E	E	M, SF, SM
bank swallow	*Riparia riparia*	☐	-	T	SF
California least tern	*Sternula antillarum*		E	E	M, SF, SM
northern spotted owl	*Strix occidentalis caurina*	☐	T	-	M
Mammals					
southern sea otter	*Enhydra lutris nereis*		T	-	SM
Steller sea lion	*Eumetopias jubatus*		T, X	-	M, SF, SM
humpback whale	*Megaptera novaeangliae*		E	-	M, SF, SM
salt marsh harvest mouse	*Reithrodontomys raviventris*		E	E	M, SF, SM

Common Name of Listed Species	Scientific Name	Retained for Impact Analysis	Designated Status[a]		Counties with Habitat in Planning Area[b]
			Federal	State	
Plants					
San Mateo thornmint	*Acanhomintha duttonii*		E	E	SM
Franciscan manzanita	*Arctostaphylos franciscana*		Under Review	-	SF
Presidio manzanita	*Arctostaphylos hookeri ssp.ravenii*		E	E	SF
Tiburon paintbrush	*Castilleja affnis ssp. neglecta*		E	T	M
fountain thistle	*Cirsium fontinale var.fontinale*		E	E	SM
Gowen cypress	*Cupressus goveniana ssp. goveniana*		T		SM
Presidio clarkia	*Clarkia franciscana*		E	E	SF
yellow larkspur	*Delphinium luteum*		E, X	Rare	M*
San Mateo wooly sunflower	*Eriophyllum latilobum*		E	E	SM
Marin dwarf-flax	*Hesperolinon congestum*		T	T	M, SF, SM
San Francisco lessingia	*Lessingia germanorum*	☐	E	E	SF, SM
white-rayed pentachaeta	*Pentachaeta bellidiflora*		E	E	SM
San Francisco popcornflower	*Plagiobothrys diffuses*		-	E	SF
Hickman's potentilla	*Potentilla hickmanii*		E	E	SM
California seablite	*Suaeda californica*		E	-	SF
showy Indian clover	*Trifolium amoenum*		E	-	M

(a) Key for Designated Status columns:
- (E) Endangered - Listed as being in danger of extinction
- (T) Threatened - Listed as likely to become endangered within the foreseeable future
- (X) Critical Habitat designated for this species [Critical Habitat - Area essential to the conservation of a species.]
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it
- (SC) Species of Concern

(b) Key for Counties Column:
- (M) Marin County
- (M*) In Golden Gate National Recreation Area within Marin County, but in area managed by Point Reyes National Seashore
- (SF) San Francisco County
- (SM) San Mateo County

APPENDIX E:
DESCRIPTIONS OF LOCAL TRANSIT SERVICE

MARIN COUNTY

West Marin Stagecoach

Administered by Marin Transit and operated under contract with MV Transportation, the Stagecoach provides the only public transportation service to West Marin County.

Two of the three Stagecoach fixed routes serve a popular Golden Gate National Recreation Area site, Stinson Beach: Route 61 (South Route), between Marin City and Bolinas via Panoramic and Shoreline highways; and Route 62 (Coastal Route), between Stinson Beach, Bolinas and Point Reyes Station via Shoreline Highway. Route 61 operates seven days a week, while Route 62 operates on Tuesdays, Thursdays and Saturdays only. Service is generally provided every few hours, although on weekends from March to December, Route 61 operates on headways of as little as 80 minutes. Connections may be made between Route 61 and Golden Gate Transit routes serving urbanized areas of Marin County, Sonoma County and San Francisco at Marin City.

West Marin Stagecoach vehicles are equipped with exterior racks accommodating up to two bicycles. Adult cash fares for both fixed-route and dial-a-ride service are $2.

Golden Gate Transit

The Golden Gate Bridge District provides bus service in eastern Marin County, Sonoma County, and San Francisco as Golden Gate Transit. Marin County park sites are served only tangentially by Golden Gate Transit, although Golden Gate Transit routes connect to the West Marin Stagecoach and Muir Woods Shuttle, expanding the reach of both. Gerbode and Rodeo Valley trails can be accessed from the Spencer Avenue bus pad along Highway 101. The stop is served by routes 4, 8, 18, 70, and 80; the first three operate only during commute hours in the peak direction (south in the morning, north in the afternoon), but Routes 70 and 80 operate all day, seven days a week, serve the Highway 101 corridor as far north as Santa Rosa, and extend well into San Francisco, connecting to the Civic Center / UN Plaza BART station and terminating at the Transbay Terminal, a hub for regional buses including AC Transit Transbay buses from the East Bay.

The only other park site served by Golden Gate Transit is Fort Baker. Fort Baker is only a few hundred feet, as the crow flies, from a stop along Alexander Avenue at Bunker Road. However, the stop is about 200 feet above the site, and access requires a walk alongside Alexander Avenue, then a steep hike down to the site (alternately, bus riders may use a more distant stop, along Alexander Avenue at East Road, which descends gently into the site). Moreover, while routes 2, 4, 10, 70, and 80 all serve the stop, only Route 10 makes more than a few early morning or evening stops, operating on roughly 60-minute headways seven days a week. (The *Marin Headlands / Fort Baker Plan* proposes to realign Route 10 through the site.)

Multiple Golden Gate Transit routes provide regional connections to West Marin Stagecoach and Muir Woods Shuttle service at the San Rafael Transit Center, Manzanita Park and Ride, Marin City and Sausalito Ferry Terminal. Golden Gate Ferry service from San Francisco also serves the latter, making timed connections to Muir Woods Shuttles when that service is in operation.

Golden Gate Transit buses are equipped with exterior bike racks, and fares vary according to distance traveled.

San Francisco Muni

The San Francisco Municipal Railway (Muni), a division of the San Francisco Municipal Transportation Agency (SFMTA), provides limited bus service to the Marin Headlands via Route 76. Route 76 operates on hourly headways on Sundays and holidays between the San Francisco Caltrain terminus and Fort Cronkite. Within San Francisco, it operates via the Montgomery BART station, Union Square district (with its many hotels), Van Ness Avenue and Lombard Street, connecting to multiple local Muni routes. Within the Headlands, it operates via Conzelman, McCullough, Bunker and Field roads to Battery Alexander, then via Field, Bunker and Mitchell roads to Fort Cronkite and Rodeo Cove, serving numerous sites within the Headlands. Most Muni buses are equipped with dual exterior bike racks. Adult cash fare is $1.50.

Among the recommendations made in 2008 by the SFMTA Transit Effectiveness Project (TEP), a major proposed revision of Muni service, was a significant increase in Route 76 service. While the route would no longer terminate at the Caltrain station, ending instead at Montgomery BART, service would be provided every 30 minutes on both Saturdays and Sundays. TEP recommendations are currently undergoing environmental review, with no firm date set yet for implementation.

SAN FRANCISCO

Muni service is described in general terms in the main body of this document. Following are details of routes serving Golden Gate National Recreation Area sites. Moving from east to west, and then north to south, park sites and the Muni routes serving them are the following:

- Aquatic Park and the east side of Fort Mason are served by bus routes 10, 19, 20, 30, 47, and 49. The Powell and Hyde cable car line terminates a few hundred feet to the east, and the F-Market and Wharves historic streetcar line terminates a few blocks to the east of that.
- The west side of Fort Mason is served directly by Route 28, and Routes 22 and 30 stop a short walk away.
- The Presidio Main Post is served by routes 29 and 43. Routes 28, 30, 41 and 45 stop just outside the park's eastern entrance, the Lombard Gate.
- Crissy Field is served by Route 29.
- There is no direct Muni bus service to Fort Point, although routes 28, 29 and 76 (on Sundays only) stop above it, at the Golden Gate Bridge. Fort Point can be accessed by hiking a few hundred feet downhill.
- Baker and China beaches are indirectly served by Route 29, which stops a few hundred feet away.
- Lands End is served by Route 18, which terminates at the Palace of the Legion of Honor.
- Fort Miley is served during the day by a branch of Route 38. Evenings, the route's main branch stops one block away.
- Sutro Heights, Sutro Bath, and the Cliff House are served by the busy routes 38 and 38L, which terminate at 48th Avenue, adjacent to Sutro Heights and a short walk from the other two sites. The Cliff House is served directly by Route 18.
- Ocean Beach encompasses much of San Francisco's coastline, and as such is served by multiple Muni routes, including the N-Judah (near its northern end, just south of Golden Gate Park) and L-Taraval (near its southern end, north of the San Francisco Zoo) Muni Metro light rail lines. Bus routes 5, 23, 31, 38

(southern branch), 48, 71, and 71L also terminate a short walk away from Ocean Beach. Route 18 parallels the entire beach, running a few blocks away along 45th Avenue for much of its length, and alongside the Great Highway immediately adjacent to Ocean Beach for part of it.

- Fort Funston is served, indirectly, by Route 18, which operates along Skyline Boulevard to its east. The peak-only Route 88 also terminates a short distance away.

The Powell and Mason and F-Market and Wharves lines, as well as routes L, N, 5, 10, 19, 20, 22, 23, 28, 28L, 30, 31, 38, 38L, 41, 45, 48, 49, 71, and 71L, all connect to BART stations. Routes N, 10, 30, 45, 47, and 48 connect to Caltrain stations. Routes L, N, 10, 20, 31, 41, 71, and 71L stop a short walk from the city's main Ferry Building, and routes 10 and 47 stop a short walk from ferry landings at Piers 33 and 41 at Fisherman's Wharf.

In 2008, an audit of Muni services, the Transit Effectiveness Project, or TEP, recommended changes to Muni routes that would alternately improve or reduce service to park sites. These recommendations, now undergoing environmental review, include the following:

- elimination of Route 10, replacement of Route 20 with a more frequent Route 11, and increased capacity on Route 30, using larger buses
- realignment of Route 43 through the Presidio Main Post (it now serves the Main Post's southeastern corner)
- termination of Route 29 near Baker Beach, eliminating service to the Golden Gate Bridge (service to the bridge would continue to be provided by Route 28)
- realignment of Route 18 so that it would no longer serve the Cliff House / Sutro Heights area
- increased service on Routes L, N, 38L, 48, and 71L
- replacement of Route 18 service on Skyline Boulevard with realigned Route 17 service
- a new 29L "super-limited" route operating between Van Ness and North Poin, near Aquatic Park, and southern San Francisco via Lombard Street, Doyle Drive, Park Presidio Boulevard, and 19th Avenue—this route was developed partly in response to endemic traffic congestion on 19th Avenue.

SAN MATEO COUNTY

SamTrans service is generally described in the main body of this document. All 100-series routes listed below connect to BART stations, 200-series routes connect to Caltrain stations, and 300-series routes connect to both. SamTrans buses are equipped with dual bike racks, and adult cash fares are $1.75.

- Routes 14, 16, 17, 110, 112, 121, 123, 140, 294, CX, and DX stop near Golden Gate National Recreation Area sites adjacent to Pacifica and Montara. Seven of those routes, most of them serving suburban areas to the north, converge at a "park and ride" lot at the Linda Mar Shopping Center near Point San Pedro. Mori Point is well-served by the relatively frequent routes 110 and 112, which connect to BART stations to the north. Because of its proximity to Skyline College, approximately a half-mile away, Milagra Ridge may be the San Mateo County park site best-served by transit, as routes 121, 123, and 140, all of which connect to the BART stations, all operate relatively frequently seven days a week.
- In the SFPUC watershed, Route 342 provides access to the Sawyer Camp and San Andreas trails, and Route 294

stops near the north trailhead of Crystal Springs Trail. However, neither of these routes operates on weekends.

- The Phleger Estate is inaccessible via public transit.

APPENDIX F:
DESCRIPTION OF SAN MATEO COUNTY TRAILS

Pedestrian conditions at Golden Gate National Recreation Area sites in San Mateo County are described in general terms in the main body of this document. Following are details of major trails, moving from north to south:

- Milagra Ridge features two well-maintained multiuse trails, one of which is paved and relatively level, while the other is unpaved and steep. While these trails do not connect to other NPS sites, Sweeney Ridge is about one mile to the south, and pedestrians can access it from Milagra Ridge via the Skyline College campus. The Bay Area Ridge Trail runs through both Milagra Ridge and Sweeney Ridge.
- Sweeney Ridge includes several ridgeline trails with excellent connectivity to nearby trails including Baquiano and Mori Ridge. While its trails are scenic, they are typically steep and unpaved. Golden Gate National Recreation Area and the City of Pacifica recently collaborated on improved access to Cattle Hill / Sweeney Ridge at the top of Fassler Avenue.
- Mori Point provides excellent connectivity to the adjacent beaches via a grade-separated path. Improvements to the Coastal Trail segment through Mori Point were recently completed.
- Point San Pedro trails are not well developed, although a Coastal Trail connection through the eastern portion of the site is planned to connect Pacifica with the future trailhead at Devil's Slide.
- Rancho Corral de Tierra access is currently on county trails north of Montara connecting to McNee Ranch State Park. In the Moss Beach area of the site, trails primarily connect to the equestrian facilities or provide trailhead access from State Route 1. The site is popular with horseback riders due to three equestrian facilities nearby. There is evidence of illegal motorcycle and four-wheel drive truck use.
- The trails in the SFPUC watershed, along the eastern shores of San Andreas Lake and Upper and Lower Crystal Springs Reservoir, are among the most popular on the Peninsula. Six miles of the San Andreas and Sawyer Creek trails are paved, and feature a striped median, mile markers, restrooms and a lush tree canopy. The 10-mile Fifield-Cahill Ridge Trail is managed by the San Francisco Public Utilities Commission and is open only by reservation to docent-led tour groups of no more than 18 people.
- Phleger Estate's steep trails are prohibited to bicyclists and dogs and are popular with horseback riders. They are well-marked, well-maintained, and connect to about a dozen trails in the area. However, the site is remote relative to other park sites in San Mateo County.

A number of improvements to the San Mateo County trails network, including trails through Golden Gate National Recreation Area sites, are planned or have been proposed. These include the following:

- Three new multiuse trails are proposed linking San Bruno

Mountain to existing trails including the Ridge Trail at Milagra Ridge.

- At Sweeney Ridge, San Mateo County plans to connect the Valley View Trail to the Ridge Trail and extend the San Andreas Trail to the Sneath Lane Trail.
- The Devil's Slide project will replace the existing Route 1 roadway along a segment of coastline plagued by landslides with a multiuse trail extending north through Point San Pedro to Pacifica State Beach and south to McNee Ranch State Park, closing a gap in the California Coastal Trail. This project is under construction and is anticipated to be completed by 2011.
- Connection and extension of the San Andreas, Sawyer Creek and Crystal Springs trails is planned in order to create an uninterrupted, nonmotorized, multiuse route from the City of San Bruno to the Town of Woodside. Along segments, a parallel route for equestrians and hikers would be developed. Multiple projects would also improve connectivity from surrounding areas to the SFPUC watershed lands.

Finally, multiple new trails are proposed around Phleger Estate, including new access trails requiring bridges over West Union Creek.

APPENDIX G:
CONSULTATION AGENCY LETTERS

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
VOICE (415) 904- 5200
FAX (415) 904- 5400
TDD (415) 597-5885

December 14, 2012

Nancy Hornor
Chief of Planning
National Park Service
Golden Gate National Recreation Area
Fort Mason
San Francisco, CA 94123

Subject: Negative Determination ND-049-12 (General Management Plan for the Golden Gate National Recreation Area and Muir Woods National Monument, San Francisco, Marin and San Mateo Counties)

Dear Ms. Hornor:

The Coastal Commission staff has reviewed the above-referenced negative determination. The National Park Service ("NPS") proposes to implement the General Management Plan ("Plan") for the Golden Gate National Recreation Area and Muir Woods National Monument ("Park"). The Plan provides the goals, objectives, and strategies that are proposed to manage the Park into the future. The main purpose of the Plan is to "offer national park experiences to a large and diverse urban population while preserving and interpreting the park's outstanding natural, historic, scenic and recreational values."

The previous general management plan for the Golden Gate National Recreation Area was adopted in 1980. Since then the Park has significantly expanded in size, climate change has become a management reality and changing demographics have resulted in shifts in public demand, uses and trends at the Park, thus necessitating a Plan update. The proposed Plan addresses these changes through the following key elements: boundary adjustments, climate change planning, a Park facilities plan, Native American engagement strategies, ocean stewardship policies, maintenance and expansion of the Park's trails and collections, and strategies to improve sustainable, multimodal access to Park sites. In addition to these overarching elements, the Plan presents three alternatives that propose different visions for managing the many areas included in the Park. The NPS preferred management alternative for park lands in Marin, San Francisco and San Mateo Counties is Alternative 1, "Connecting People with Parks," with the goal of engaging the community in the "enjoyment, understanding and stewardship of park resources and values." The NPS preferred management alternative for Muir Woods National Monument and Alcatraz Island is Alternative 3, "Focusing on National Treasures," which seeks to preserve and encourage appreciation and enjoyment of these sites.

The Plan includes programmatic-level descriptions of projects proposed for implementation at the Park. For example, the Plan provides for continuing public access and recreation at various locations throughout the Park, including expanding regional park ferry access and the Muir Woods shuttle service, and improving non-motorized access to park lands. The Plan also provides for the improvement of existing facilities and the construction of new facilities, including trailheads, parking lots, campsites, picnic areas and restrooms that facilitate public access to coastal resources. Water-oriented recreational activities such as surfing, swimming, hiking, kayaking, fishing, boating and crabbing will continue to be supported at several locations within the Park.

In addition, the Plan seeks to protect and strengthen coastal ecosystems. The Ocean Stewardship section of the Plan contains several strategies that achieve this goal, including identifying and quantifying threats to marine resources, establishing sensitive resource zones and special closure areas to protect biological resources, reducing point and nonpoint source pollution within and adjacent to park lands, and developing strategies to respond to climate change. Furthermore, the Plan aims to preserve the scenic and visual qualities of park lands and coastal resources. Specific strategies, including vegetative screening, design of park facilities to avoid or minimize impacts to visual resources and maintenance of existing scenic viewpoints will be implemented as appropriate on a project-specific basis.

The subject negative determination for the Plan includes a commitment by the NPS to coordinate with the Commission to determine which future Plan projects will require individual consistency or negative determinations. While proposed Plan projects may affect coastal resources, the extent of these effects, if any, cannot be fully determined until subsequent, more detailed project planning is completed. As individual project planning is completed, the NPS will contact the Commission staff to determine the need for federal consistency review.

The Commission staff **agrees** that with the commitment for additional consistency review of future development projects, implementation of the General Management Plan for the Golden Gate National Recreation Area and Muir Woods National Monument will not adversely affect coastal resources. We therefore **concur** with your negative determination made pursuant to 15 CFR 930.35 of the NOAA implementing regulations. Please contact Kate Huckelbridge at (415) 396-9708 should you have any questions regarding this matter.

Sincerely,

(for) CHARLES M. LESTER
Executive Director

cc: CCC – North Central Coast District

Making San Francisco Bay Better

December 8, 2011

Superintendent
Golden Gate National Recreation Area
Attn: Draft GMP/EIS
Building 201, Fort Mason
San Francisco, CA 94123

SUBJECT: Golden Gate National Recreation Area (GGNRA)/Muir Woods National Monument Draft General Management Plan/Draft Environmental Impact Statement (DEIS); BCDC Inquiry File No.: MCMC.7603.1

Dear Superintendent:

The San Francisco Bay Conservation and Development Commission (BCDC) staff appreciates the opportunity to review and comment on the Draft General Management Plan/DEIS for the GGNRA/Muir Woods National Monument dated September 2011. Although our Commission has not had the opportunity to review the draft document, the staff comments are based on BCDC's law, the McAteer-Petris Act and the policies of the *San Francisco Bay Plan* (Bay Plan).

Commission Jurisdiction and Authority. As a regulatory authority for the San Francisco Bay and shoreline, BCDC is responsible for granting or denying permits for any proposed fill (earth or any other substance or material, including pilings or structures placed on pilings, and floating structures moored for extended periods), extraction of materials or change in use of any water, land or structure within the its jurisdiction. Generally, BCDC's jurisdiction over the Bay extends from the Golden Gate (Point Bonita to Point Lobos) to the Sacramento River and includes tidal areas up to the mean high tide level, including all sloughs, and marshlands up to five feet above mean sea level; the shoreline band consisting of territory located between the Bay shoreline and 100 feet landward and salt ponds; managed wetlands (areas diked from the Bay and managed as duck clubs); and "certain waterways" leading to the Bay.

The Commission grants permits for projects if it finds that they are either (1) necessary to the health, safety or welfare of the public in the entire Bay Area, or (2) consistent with the provisions of the McAteer-Petris Act and the Bay Plan. The McAteer-Petris Act states that fill in the Bay must serve a water-oriented use and, among other things, must have no upland alternative, be the minimum to achieve the project purpose, and not cause adverse impacts to Bay resources. The McAteer-Petris Act and the Bay Plan also require that proposed projects provide the maximum feasible public access consistent with the project.

The Commission's Bay Plan also includes priority land use designations sites along the shoreline to ensure that sufficient area is reserved for important water-oriented uses, such as ports, airports, water-related industry, parks, and wildlife areas. Much of the Golden Gate National Recreation Area is located within an area designated for Waterfront Park and Beach priority use. Projects within such areas which are inconsistent with the designated uses require an amendment to the Bay Plan. The Muir Woods National Monument is not located within the Commission's jurisdiction.

Finally, BCDC—along with the California Coastal Commission—are the California state agencies whose coastal management programs are consistent with the Coastal Zone Management Act. This should be noted on page 70 of Volume III under the Section "Coastal Zone Management Act Consistency". We understand that the GGNRA/Muir Woods National Monument Draft General Management Plan/DEIS is a programmatic document and does not address or propose for implementation site specific federal activities. Please note that a consistency determination will be required prior to implementation of any such activities.

Public Access. Section 66602 of the McAteer-Petris Act states, in part, that "existing public access to the shoreline and waters of the San Francisco Bay is inadequate and that maximum feasible public access, consistent with a proposed project, should be provided." Furthermore, the McAteer-Petris Act allows for the placement of fill in the Bay for water-oriented uses or for improving shoreline appearance or public access.

The GGNRA provides tremendous opportunities to recreate on and near the shoreline of the Bay at numerous locations, including Fort Mason, Crissy Field and Fort Baker. Any project identified in the Draft General Management Plan/EIS which requires Bay fill or new shoreline facilities, such as the development of a water shuttle at Fort Mason and improvements to the historic Alcatraz pier (Pier 4), should address public access improvements and how they would provide "maximum feasible access to and along the waterfront." In addition, various alternatives in the Draft General Management Plan/EIS anticipate expansion of visitor use and access, which will likely further improve the visitor experience within the park and along the shoreline. The Final General Management Plan should recognize the potential for conflict between public access and adjacent sensitive habitat that exists at various locations, including Alcatraz and Crissy Field.

Transportation. Alternative 1 of the Draft General Management Plan anticipates improved access to the park by a water shuttle at Lower Fort Mason, expansion of the F line and development of bus rapid transit on Van Ness Avenue. It is foreseeable that some of these improvements could potentially occur within BCDC's jurisdiction. Due to the vulnerability of the Bay to filling for transportation projects the Commission encourages alternative methods of transportation and land use planning efforts that support transit and that do not require fill.

Recreation. The GGNRA provides a vast array of recreational opportunities for park users and the Final General Management Plan will likely lead to future improvements to the park'srecreational opportunities. Bay Plan policies state that "Diverse and accessible water-oriented recreational facilities, such as marinas, launch ramps, beaches, and fishing piers, should be provided to meet the needs of a growing and diversifying population, and should be well distributed around the Bay and improved to accommodate a broad range of water-oriented recreational activities for people of all races, cultures, ages and income levels." Bay Plan Recreation policies also state in part "Ferry terminals may be allowed in waterfront park priority use areas and near fishing piers and launching lanes provided the development and operations of the ferry facilities do not interfere with current or future park and recreational uses, and navigational safety can be assured."

Fish, Other Aquatic Organisms and Wildlife. The Golden Gate National Recreation Area provides a diverse array of habitat for species in coastal, marine and terrestrial environments. The Draft General Plan more than adequately identifies the potential for impacts upon habitats and species within the park. However, any project identified in the Final General Plan would need to be consistent with the Bay Plan policies on fish, aquatic organisms and wildlife. For example, Policy 1 states "To assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's tidal marshes, tidal flats, and subtidal habitat should be conserved, restored and increased."

Sea Level Rise. Considering the potential impacts from climate change, such as sea level rise, it is appropriate that the General Management Plan addresses climate change impacts. Specifically, the Management Strategies identified in Volume I, Part 3, Page 118-120 are appropriate strategies to effectively respond and adapt to climate change impacts. BCDC has recently amended the Bay Plan to include a new "Climate Change" section and to amend the existing "Public Access, Safety of Fills, Shoreline Protection and Tidal Marsh/Tidal Flats" sections to allow the Commission to respond to climate change related impacts such as sea level rise. Upon adoption by the Office of Administrative Law the new and existing sections of the Bay Plan will be available at www.bcdc.ca.gov.

Thank you again for the opportunity to review and comment on the GGNRA Draft Management Plan/DEIS. If you have any questions please contact me directly at (415) 352-3667 or at timd@bcdc.ca.gov

Sincerely,

TIMOTHY DOHERTY
Coastal Planner

TM/gg

United States Department of the Interior

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

IN REPLY REFER TO:

N1621 (GOGA-PLAN)

SEP - 9 2008

John McKeon
NOAA - National Marine Fisheries Service
777 Sonoma Avenue, Suite 325
Santa Rosa, CA 95404

Subject: General Management Plan/EIS for Golden Gate National Recreation Area & Muir Woods National Monument (Notice of Intent published in Federal Register Volume 71, Number 60 on 3/28/06; Document # 06-3016)

Dear Mr. Mc Keon:

The National Park Service (NPS) has begun the process of developing a general management plan (GMP) for Golden Gate National Recreation Area and Muir Woods National Monument. This programmatic plan will guide management, use and development of the two park units for the next 20 to 25 years. To fulfill our National Environmental Policy Act and Endangered Species Act requirements, and satisfy NPS management policies, we would like to initiate informal consultation on this project. We are therefore requesting a list of all federally listed threatened and endangered species, critical or essential fish habitats, proposed species, or other special status species, that might occur in the two parks (located in Marin, San Francisco, and San Mateo counties, CA).

Please direct your response to Patrick Malone, Natural Resource Specialist, at the Denver Service Center, 12795 W. Alameda Parkway, Denver, CO 80225. You can also e-mail Patrick at patrick_malone@nps.gov. Should you have any questions, please call him at (303) 969-2415.

Thank you for your assistance.

Sincerely,

Brian O'Neill
General Superintendent

cc: Patrick Malone, DSC Natural Resource Specialist
Stephan Nofield, DSC Project Manager
Bill Merkle, Acting Chief of Natural Resources, GOGA
Nancy Hornor, Chief of Planning, GOGA
Steve Ortega, NEPA Coordinator, GOGA
Rodney McInnis, Regional Administrator, NOAA Fisheries Southwest Region

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

NOV 10 2011

Frank Dean
General Superintendent
Golden Gate National Recreation Area
Attention: Draft GMP/EIS
Fort Mason, Building 201
San Francisco, California 94123

Dear Mr. Dean:

NOAA's Office of Program Planning Integration (PPI) is providing comments to the National Park Service (NPS) on the *Draft General Management Plan and Environmental Impact Statement for the Golden Gate National Recreation Area* (GGNRA). Please find enclosed comments from two offices within NOAA, the National Ocean Service, Office of National Marine Sanctuaries, Gulf of the Farallones National Marine Sanctuary (on behalf of Superintendent Maria Brown), and the National Marine Fisheries Service (NMFS), Southwest Region, North Central Coast Office.

NOAA is pleased to be a co-trustee with the NPS in the management of this country's natural, historic and cultural resources, and we hope that the NPS finds our comments useful. Please do not hesitate to let us know if there are any questions we may answer for you. For questions regarding comments from the Gulf of the Farallones National Marine Sanctuary (GFNMS), please contact Karen Reyna at 415-970-5247 or karen.reyna@noaa.gov. For questions regarding comments from NMFS Southwest Region, North Central Coast Office, please contact John McKeon at John.McKeon@noaa.gov.

Sincerely,

Paul N. Doremus, Ph.D.
NOAA NEPA Coordinator

Enclosure

Thank you for requesting comments from NOAA's North Central Coast Office of the National Marine Fisheries Service, Southwest Region (NMFS) regarding the National Park Service's (NPS) Draft General Management Plan and Environmental Impact Statement (DEIS) for the Golden Gate National Recreation Area and Muir Woods National Monument (collectively referred to as GGNRA). NMFS' comments based on our review of the DEIS for the General Management Plan (GMP). The GMP (NPS reference: D18 GOGA-PLAN) is intended to guide management of these parks for the next 20 years.

General Comments

NMFS appreciates the opportunity to comment on this plan because the NPS, as a Federal resource and land stewardship Service dedicated to the preservation and enhancement of the nation's natural and cultural heritage, is uniquely qualified as a public entity to carry out the purposes of the Endangered Species Act of 1973, as amended (ESA). Congress passed the ESA "*to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved*", and to enshrine as national policy "*that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes*" of the ESA (16 USC §1531). The ESA defines conserve as "*the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary*" (16 USC §1532). The responsibilities of all Federal agencies, including the NPS, under the ESA are described at 16 USC §1536: "*All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this chapter by carrying out programs for the conservation of endangered species and threatened species listed*".

As NPS is aware, many of the freshwater streams and estuarine habitats within the GGNRA boundaries support, or at one time supported populations of ESA listed Central California Coast (CCC) Evolutionarily Significant Unit (ESU) coho salmon (*Oncorhynchus kisutch*) and CCC Distinct Population Segment (DPS) steelhead (*O. mykiss*). Throughout the DEIS, the ESA listing status of these species is referred to as *Threatened*. This is the correct ESA listing status for the CCC steelhead DPS. However, the listing status of CCC ESU coho salmon was upgraded to *Endangered* effective August 29, 2005 (70 FR 37160). Please make this correction in the EIS.

The three action alternatives of the Plan presented in the DEIS all propose the creation of a variety of management zones that would assist in the protection of special status species by limiting or restricting public access. Under the proposed action alternatives, between 77 and 92 percent of the parks would be zoned using the Natural and Sensitive Resources designation. Also common to all action alternatives are varying suites of improvements and changes to transportation and trails to more fully address the needs of park visitors accessing the parks, to protect park resources, and to reduce the carbon footprint of public access to the parks. NMFS fully supports these actions as described in the GMP. Public access to, and education about natural resources, special status and endangered species, and the ecosystem functions that sustain

their habitats are critical to maintaining community support for preservation and recovery of these threatened resources.

Recommendations

The three action alternatives also have in common the Natural Resource goal of preserving the fundamental natural resources that contribute to the significance of the parks. However, the Natural Resource goals of Alternative II most fully implements NPS responsibilities under the ESA for the conservation of listed species and the ecosystems on which they depend. NMFS recommends the following Natural Resource goals of Alternative II be incorporated into the preferred alternative:

- Reconnect fragmented habitat within and adjacent to the parks to strengthen the integrity and resilience of the coastal ecosystems to respond to climate change and urban pressures.

- Optimize recovery of special status species and survival of wide ranging wildlife.

- Restore natural processes and/or allow these processes to evolve unimpeded to the greatest degree feasible.

- Promote partnerships to help the park become a center for innovative coastal science, stewardship, and learning.

These goals were the guiding principles during the ESA section 7 consultations completed by NMFS and the NPS regarding habitat restoration projects on lower Redwood Creek Banducci site, and at Muir Beach Big Lagoon. These projects will have significant benefits for multiple listed species, as the focus of restoration was restoring ecosystem processes and the seasonal ecosystem functions that create and sustain habitat for special status species. With the expansion of the parks into San Mateo County and the proposed land acquisitions, the GGNRA will have increased opportunity and responsibility to foster similar restoration efforts for the conservation of ESA listed species.

NMFS views the collaboration and consultations between NMFS and NPS as an integral component of strategies to conserve and recover ESA listed species of Pacific salmonids. We look forward to a continued close association with NPS in this effort. If you have any questions regarding these comments please contact John McKeon at John.McKeon@noaa.gov.

Wojcik, Don <don_wojcik@nps.gov>

ESA Section 7 concurrence - Golden Gate National Recreation Area GMP/EIS

1 message

Wojcik, Don <don_wojcik@nps.gov> Tue, Mar 12, 2013 at 5:29 PM
To: john.mckeon@noaa.gov
Cc: Brian Aviles <brian_aviles@nps.gov>, Thomas Gibney <tom_gibney@nps.gov>

Hello John,

I am one of the NPS resource planners working on the General Management Plan / Environmental Impact Statement (GMP/EIS) for the Golden Gate National Recreation Area. I am writing to inquire about the status of the NMFS concurrence with the NPS Section 7 determinations for federally listed species noted in the Draft GMP/EIS (dated September 2011).

We received review comments from your office that were incorporated into a letter from NOAA NEPA Coordinator, Paul Doremus, Ph.D., dated November 10, 2011 (see pages 17-18 in attached letter PDF). Generally speaking, the editorial corrections noted in your comments have been addressed (e.g., corrected listing status of the CCC ESU coho). The general habitat conservation recommendations in your letter are also consistent with NPS management policies for natural resource management in the park.

Please note, since the GMP/EIS is a long-range, programmatic planning document, the analysis of impacts in the document have also been conducted on a similar broad scale. Specific subsequent actions/projects identified in the programmatic guidance of the GMP/EIS will involve the necessary site-specific and species-specific impact analyses and environmental compliance at a later date when those actions/projects are implemented (i.e., NEPA, ESA, etc.). This future compliance will be similar to the consultation for site-specific restoration projects you noted in your comments (at Lower Redwood Creek and Muir Beach).

With that said, the NPS GMP//EIS planning team is seeking confirmation that the NPS has fulfilled the necessary requirements to receive NMFS concurrence with the ESA Section 7 determinations noted in the Draft GMP/EIS so that we can move forward toward a Final GMP/EIS for Golden Gate National Recreation Area. Please advise, and let me know if you have further questions. Thanks!

Best regards,

Don Wojcik
Natural Resource Specialist
Denver Service Center - Planning Division
National Park Service
303-969-2399

NOAA Kokkinakis.pdf
1763K

United States Department of the Interior

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

IN REPLY REFER TO:

N1621 (GOGA-PLAN)

SEP - 9 2008

Christopher Nagano
USFWS, Sacramento Office
2800 Cottage Way Room W-2605
Sacramento, CA 95825

Reference: General Management Plan/EIS for Golden Gate National Recreation Area & Muir Woods National Monument (Notice of Intent published in Federal Register Volume 71, Number 60 on 3/28/06; Document # 06-3016)

Dear Mr. Nagano:

The National Park Service (NPS) has begun the process of developing a general management plan (GMP) for Golden Gate National Recreation Area and Muir Woods National Monument. This programmatic plan will guide management, use and development of the two park units for the next 20 to 25 years. To fulfill our National Environmental Policy Act and Endangered Species Act requirements, and satisfy NPS management policies, we would like to initiate informal consultation on this project. We are therefore requesting a list of all federally listed threatened and endangered species, critical habitats, proposed species, or other special status species that might occur in the two parks (located in Marin, San Francisco, and San Mateo counties, CA).

Please direct your response to Patrick Malone, Natural Resource Specialist, at the Denver Service Center, 12795 W. Alameda Parkway, Denver, CO 80225. You can also e-mail Patrick at patrick_malone@nps.gov. Should you have any questions, please call him at (303) 969-2415.

Thank you for your assistance.

Sincerely,

for Brian O'Neill
General Superintendent

cc: Patrick Malone, DSC Natural Resource Specialist
Stephan Nofield, DSC Project Manager
Bill Merkle, Acting Chief of Natural Resources, GOGA
Nancy Hornor, Chief of Planning, GOGA
Steve Ortega, NEPA Coordinator, GOGA

United States Department of the Interior

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

IN REPLY REFER TO:
D18 (GOGA-PLAN)

MAR - 5 2013

Susan K. Moore, Field Supervisor
U.S. Fish and Wildlife Service
Sacramento Fish & Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, CA 95825

Re: Draft General Management Plan/Environmental Impact Statement Endangered Species Act – Section 7 Consultation

Dear Ms. Moore:

We are contacting your office regarding Section 7 compliance with the Endangered Species Act, as it relates to the Draft General Management Plan/Environmental Impact Statement (DGMP/EIS) for Golden Gate National Recreation Area and Muir Woods National Monument. The National Park Service (NPS) is seeking written concurrence from the U.S. Fish and Wildlife Service (USFWS) on the Section 7 determinations for federal-listed threatened and endangered species that inhabit these national park units, located in Marin, San Francisco, and San Mateo counties, California.

Informal consultation was initiated with the USFWS in September 2008. In September 2011, the DGMP/EIS document was submitted to your office for review and Section 7 concurrence. The comment period ran from September 9, 2011 through December 9, 2011. During this comment period, NPS received specific review comments from the USFWS regarding elements of the plan that related to seabird habitat and the Common Murre Restoration Project. Enclosed is a copy of the comment letter and of the DGMP/EIS for your reference. However, we did not receive an official concurrence letter that identified the agency position on the draft Section 7 determinations or conditions that are necessary to achieve concurrence.

Please contact Brian Aviles, Senior Planner, to coordinate the submittal of a Section 7 concurrence letter for the above-referenced document at (415) 561-4942 or brian_aviles@nps.gov.

Sincerely,

Frank Dean

Frank Dean
General Superintendent

Enclosures (2): USFWS Comment Letter on DGMP/EIS
Golden Gate National Recreation Area & Muir Woods National Monument DGMP/EIS

cc: Ryan Olah
Ray McPadden

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay National Wildlife Refuge Complex
1 Marshlands Road, Fremont, California 94555

December 8, 2011

Superintendent Frank Dean
Golden Gate National Recreational Area
Building 201, Fort Mason
San Francisco, CA 94123
ATTN: Draft GMP/EIS

RE: Comments on the Draft General Management Plan and Environmental Impact Statement

Dear Superintendent Dean,

We would like to take this opportunity to submit comments for the Draft General Management Plan (DGMP) and Environmental Impact Statement (EIS) for the Golden Gate National Recreational Area (GGNRA). The U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex manages a seabird restoration program known as the Common Murre Restoration Project. Our efforts are aimed at restoring depleted seabird populations along the central California coast, specifically those of the Common Murre (*Uria aalge*). As part of this project, we conduct a variety of studies examining breeding population sizes, reproductive performance, and impacts of human and natural disturbances to breeding seabirds. Study or survey sites within your planning area include Bird Island (or, Bird Rock) near Point Bonita, Alcatraz Island, San Pedro Rock, and Devil's Slide. Therefore, the comments provided focus on strengthening the preferred alternative within the coastal zone adjacent to sensitive seabird breeding or roosting areas.

Comments are divided into three parts and address the topic questions from the planning team: 1) What proposals or aspects do you like about the preferred alternative in this Draft General Management Plan/Environmental Impact Statement (DGMP/EIS); 2) Do you have any suggestions for improving the preferred alternative in this DGMP/EIS? If so, what are they; and 3) Do you have any other comments related to this DGMP/EIS?

1) Supported proposals or aspects of the preferred alternative in the Draft General Management Plan/Environmental Impact Statement:

The DGMP does an excellent job of recognizing important seabird nesting areas at Bird Rock (also called Bird Island; Marin County) and Alcatraz Island. We support the designation of the offshore areas at Point Bonita Cove and Bird Rock as a Sensitive Resources Zone. Bird Rock is an important roosting area for Brown Pelicans, Brandt's Cormorants, and other seabirds. The rock has also supported breeding Brandt's and Pelagic Cormorants, Western Gulls, and more

recently, Common Murres. Murres were first observed attending Bird Rock in 2007 and breeding was verified in 2008, 2010, and 2011. Additionally, the high level of recreational use in this area may make the seabirds nesting and roosting in the area susceptible to impacts from human disturbance. Thus, additional protections will benefit seabirds there.

In addition, you should re-examine the nomenclature for Bird Rock/Bird Island. On the USGS topographic map and the U.S. Fish and Wildlife Service Catalog of California Seabird Colonies, it is referred to as Bird Island.

2) Suggestions for improving the preferred alternative in this DGMP/EIS:

There are several instances where the currently identified preferred alternative can be strengthened by adding elements of alternative 2.

Pedro Point, Devil's Slide, and San Pedro Mountain
We support zoning the Devil's Slide Area west of Highway 1 as a Sensitive Resources Zone as identified in alternative 2. Since 1996, we have been working to restore a Common Murre colony at Devil's Slide as well as conducting breeding studies on various seabird species. The designation of this area as a Sensitive Resources Zone will help protect this sensitive seabird colony. In particular, several bird species that nest on the mainland cliffs would benefit from this designation, including Pelagic Cormorants, Brandt's Cormorants, Common Murres, Black Oystercatchers, Peregrine Falcons, Great Horned Owls, and Western Gulls. Managing this area as a Sensitive Resources Zone will be beneficial especially since the planned closing of the Devil's Slide section of Highway 1 and opening of the pedestrian/bike trail will result in a large increase in recreational use of the area, with potentially large impacts to breeding seabirds from human disturbance.

Alcatraz Island – Offshore Bay Environment
We support extending the Sensitive Resources Zone to 300 feet from the island's shore as well as demarcation buoys as outlined in alternative 3. Our monitoring at several seabird colonies in central California has shown that keeping boats and kayaks at this distance is effective for reducing disturbance to seabirds. Given the high volume of boat traffic off Alcatraz, buoys will be nearly essential for effectiveness.

3) Other comments:

San Pedro Rock on the San Mateo coast is a seabird breeding and roosting area as well as a haul out site for harbor seals. Although the rock is located outside of the GMP area, at low tide it is accessible from the mainland of the future park addition of San Pedro Point, which is part of the GMP. Therefore, we recommend considering these resources when planning management for this area.

More information about seabird colonies should be included in the Birds section of the draft EIS (Vol II, p 58). Information about the birds using Bird Rock (Marin County), Devil's Slide and San Pedro Rock should be added for a more comprehensive report. We can provide recent information on the status ofseabird breeding populations within the GMP, upon request.

Thank you for the opportunity to provide comments. If you have any questions, please contact me at 510-792-0222, x222.

Sincerely,

Gerry McChesney
Manager, Common Murre Restoration Project

APPENDIX H:
COORDINATION AGENCY LETTERS

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5541
FAX (510) 286-5559
TTY 711

Flex your power!
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November 7, 2011

BAG051

Mr. Frank Dean
Golden Gate National Recreation Area
National Park Services
Fort Mason, Building 201
San Francisco, CA 94123

Dear Mr. Dean:

Golden Gate National Recreation Area and Muir Woods National Monument – Draft General Management Plan/ Environmental Impact Statement (DGMA/EIS)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Golden Gate National Recreation Area (GGNRA) and Muir Woods National Monument project. The following comments are based on the DGMA/EIS. We are specifically concerned with; 1) inter-agency coordination for appropriate decision making responsive to emergency events as discussed for Alternative 2, 2) collaboration in drafting the long-term transportation plans associated with the project, and 3) the reduction of overall vehicle miles travelled through the implementation of non-single occupancy vehicle modes of transport to access GGNRA.

Alternative 2
For Alternative 2, the DGMA/EIS proposes abandoning State Route (SR) 1 between Muir Beach and Stinson Beach if a catastrophic landslide occurs. Please be advised that the Department will need to make an independent assessment as to the appropriate short and long-term response to such a landslide and whether SR 1 would be repaired in its current alignment or realigned elsewhere.

Transportation Management
In the DGMA/EIS, it indicates that National Park Services (NPS) aims to pursue sustainable and multi-modal access to park sites. One of the strategies is the development of a long-range transportation plan. The Department would like to be an active partner in the development of the long-range transportation plan to discuss the role of state facilities as the principal access to GGNRAs within the Bay Area. With respect to the goals of the Long Range Transportation Plan, the development of future transportation projects should include input from all applicable transportation/county/transit agencies in the Bay Area. Previously, the Department had collaborated with NPS in identifying Intelligent Transportation System (ITS) elements to improve access for visitors to Muir Woods and Stinson Beach through the recently completed GGNRA ITS plan. Further, the Department is currently involved as key member and contributor for the development of the Alexander Avenue Planning Study.

In addition, the Department recommends providing consistent year-round shuttle service to Muir Woods and facilities to accommodate private tour buses to maximize the use of the "Welcome Center". The "Welcome Center" area can serve as a transfer hub for users to connect from private vehicles, tour buses and transit to the shuttle service. By improving transit opportunities, it can significantly reduce Single Occupant Vehicles (SOV) use to the GGNRA.

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

GARY ARNOLD
District Branch Chief
Local Development - Intergovernmental Review

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

DEC 0 5 2011

Frank Dean, General Superintendent
Golden Gate National Recreation Area
Building 201, Fort Mason
San Francisco, CA 94123
Attn: General Management Plan

Subject: Draft Environmental Impact Statement for the Golden Gate National Recreation Area General Management Plan, Marin, San Francisco, and San Mateo Counties, California (CEQ# 20110298)

Dear Mr. Dean:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (EIS) for the above project. Our review and comments are pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act.

EPA understands that a new General Management Plan (GMP) is needed to incorporate new lands that have been acquired by Golden Gate National Recreation Area (GGNRA), to address increased public demand for open spaces, and to adopt new strategies regarding climate change and transportation demands. The preferred alternative (Alternative 1 for lands in Marin, San Francisco, and San Mateo and Alternative 3 for Alcatraz Island and Muir Woods) is the environmentally preferred alternative and would provide the greatest number of visitor opportunities while still maintaining the integrity of natural and cultural resources. Based on our review, EPA has rated the document Lack of Objections (see enclosed "Summary of EPA Rating Definitions").

Master planning efforts provide an excellent opportunity to incorporate sustainability into long-term decision-making. EPA understands that with attempts to upgrade new facilities and to increase and expand visitor use in the park under Alternative 1, there could be long-term increases in energy consumption and related emissions (volume II, p. 224). We support green infrastructure as part of the remodels and renovations, such as, for example, the proposal to provide green sustainable infrastructure to replace the diesel generators on Alcatraz Island (volume I, p. 170). Decreasing emissions is also an important part of the transportation plan, and expanding shuttle and bicycle access, as is proposed, will lead to great benefits for the park.

We appreciate the opportunity to review this Draft EIS. Should you have any questions regarding our comments, please contact me at (415) 972-3521, or contact Stephanie Skophammer, the lead reviewer for the project. Stephanie can be reached at (415) 972-3098 or skophammer.stephanie@epa.gov.

SUMMARY OF EPA RATING DEFINITIONS*

This rating system was developed as a means to summarize the U.S. Environmental Protection Agency's (EPA) level of concern with a proposed action. The ratings are a combination of alphabetical categories for evaluation of the environmental impacts of the proposal and numerical categories for evaluation of the adequacy of the Environmental Impact Statement (EIS).

ENVIRONMENTAL IMPACT OF THE ACTION

"LO" (Lack of Objections)

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

"EC" (Environmental Concerns)

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

"EO" (Environmental Objections)

The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

"EU" (Environmentally Unsatisfactory)

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

ADEQUACY OF THE IMPACT STATEMENT

"Category 1" (Adequate)

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

"Category 2" (Insufficient Information)

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analysed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

"Category 3" (Inadequate)

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analysed in the draft EIS, which should be analysed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

*From EPA Manual 1640, Policy and Procedures for the Review of Federal Actions Impacting the Environment.

U.S. Department of Homeland Security
FEMA Region IX
1111 Broadway, Suite 1200
Oakland, CA. 94607-4052

FEMA

September 13, 2011

Superintendent
Golden Gate National Recreation Area
Attn: Draft GMP/EIS
Building 20, Fort Mason
San Francisco, California 94123

Dear Superintendent:

This is in response to your request for comments on the National Park Service, U. S. Department of Interior – Golden Gate National Recreation, Muir Woods National Monument Draft General Management Plan/Environmental Impact Statement.

Please review the current effective Flood Insurance Rate Maps (FIRMs) for the City and County of San Francisco (Community Number 060298), San Mateo County (Community Number 060311), and Marin County (Community Number 060173), Maps revised May 4, 2009. Please note that the City and County of San Francisco, Counties of San Mateo and Marin are participants in the National Flood Insurance Program (NFIP). The minimum, basic NFIP floodplain management building requirements are described in Vol. 44 Code of Federal Regulations (44 CFR), Sections 59 through 65.

A summary of these NFIP floodplain management building requirements are as follows:

- All buildings constructed within a riverine floodplain, (i.e., Flood Zones A, AO, AH, AE, and A1 through A30 as delineated on the FIRM), must be elevated so that the lowest floor is at or above the Base Flood Elevation level in accordance with the effective Flood Insurance Rate Map.

- If the area of construction is located within a Regulatory Floodway as delineated on the FIRM, any ***development*** must not increase base flood elevation levels. **The term *development* means any man-made change to improved or unimproved real estate, including but not limited to buildings, other structures, mining, dredging, filling, grading, paving, excavation or drilling operations, and storage of equipment or materials.** A hydrologic and hydraulic analysis must be performed *prior* to the start of

development, and must demonstrate that the development would not cause any rise in base flood levels. No rise is permitted within regulatory floodways.

- All buildings constructed within a coastal high hazard area, (any of the "V" Flood Zones as delineated on the FIRM), must be elevated on pilings and columns, so that the lowest horizontal structural member, (excluding the pilings and columns), is elevated to or above the base flood elevation level. In addition, the posts and pilings foundation and the structure attached thereto, is anchored to resist flotation, collapse and lateral movement due to the effects of wind and water loads acting simultaneously on all building components.

- Upon completion of any development that changes existing Special Flood Hazard Areas, the NFIP directs all participating communities to submit the appropriate hydrologic and hydraulic data to FEMA for a FIRM revision. In accordance with 44 CFR, Section 65.3, as soon as practicable, but not later than six months after such data becomes available, a community shall notify FEMA of the changes by submitting technical data for a flood map revision. To obtain copies of FEMA's Flood Map Revision Application Packages, please refer to the FEMA website at http://www.fema.gov/business/nfip/forms.shtm.

Please Note:

Many NFIP participating communities have adopted floodplain management building requirements which are more restrictive than the minimum federal standards described in 44 CFR. Please contact the local community's floodplain manager for more information on local floodplain management building requirements. The San Francisco City and County floodplain manager can be reached by calling Linda Yeung, Deputy City Administrator, at (415) 554-7124. The San Mateo County floodplain manager can be reached by calling Kelly Moran, at (650) 363-4161. The Marin County floodplain manager can be reached by calling Berenice Davidson, Associate Civil Engineer, at (415) 499-3770.

If you have any questions or concerns, please do not hesitate to call Cynthia McKenzie at (510) 627-7190 and/or Michael Hornick at (510) 627-7260 of the Mitigation staff.

Sincerely,

Gregor Blackburn, CFM, Branch Chief
Floodplain Management and Insurance Branch

cc:
Ray Lee, WREA, State of California, Department of Water Resources, North Central Region Office
Gregor Blackburn, CFM, Branch Chief, Floodplain Management and Insurance Branch, DHS/FEMA Region IX
Cynthia McKenzie, Senior Planner, CFM, DHS/FEMA Region IX
Michael Hornick, Floodplanner, CFM, DHS/FEMA Region IX
Alessandro Amaglio, Environmental Officer, DHS/FEMA Region IX

DEPARTMENT OF PUBLIC WORKS

COUNTY OF MARIN
www.co.marin.ca.us/pw

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BUILDING MAINTENANCE
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ALL AREA CODES ARE 415

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November 28, 2011

Superintendent
Golden Gate National Recreation Area
Attention: Draft GMP/EIS
Fort Mason, Building 201
San Francisco, CA 94123

Subject: Comments from Marin County Department of Public Works

Please find below our comments on the Golden Gate National Recreation Area Muir Woods National Monument Draft General Management Plan/Environmental Impact Statement.

V1 Part 6, pg. 317

ARRIVAL
Offsite Welcome Center
To enhance the visitor experience and address congestion problems, permanent shuttle service to Muir Woods National Monument would be provided during peak periods throughout the year, supported by a new welcome center in the vicinity of State Route 1 and Highway 101, ~~created~~ to be developed in collaboration with Marin County, California State Parks,
and Caltrans. Shuttles would travel a distance of about six miles to the monument. Express transit service from downtown San Francisco and improved connections with the regional ferry services would also be pursued. The welcome facility would provide necessary visitor services that could include parking, sheltered waiting areas, restrooms, and orientation to the monument and other regional park destinations. The facility would also connect visitors to other regional and local transportation systems.

COMMENT: The proposed new welcome center lacks design details to determine feasibility. The County of Marin requests to see preliminary design now to look at grades, alignment, topography to determine grading necessary and to ensure it properly conforms to existing infrastructure. All design aspects shall meet Marin County Codes (http://library.municode.com/index.aspx?clientID=16476&stateID=5&statename=California) Specifically Title 24
Note that any working in the County of Marin maintained right-of-way would require an encroachment permit to ensure it is built to County standards. If work is proposed within Caltrans right-of-way, National Parks Service shall take the lead in coordinating all agencies involved including any work in private properties.

In addition, cost estimate for this facility and any other work proposed within County of Marin, shall include County's application, review and inspection fees. Once detailed design is available, County can provide an estimate.

VII Part 8 Page 218-219

The park staff would also continue to work with the community and Marin County to manage parking and reduce traffic in Stinson Beach using congestion management tools What tools? List examples.
In the developed beach area, the parking lot would be replaced by a more sustainable parking facility. This would have a long-term, minor to moderate, beneficial impact on visitor access to the park, depending on the success of the congestion management
efforts WHAT EFFORTS?. Also at Stinson Beach, the park staff would explore ways to improve non-auto access to the beach, such as promoting public transportation on weekends during the peak season. Park managers would work with Marin County and state parks to explore realignment of Muir Woods Road to reduce impacts to Redwood Creek. A realignment of Muir Woods Road would have a short-term, moderate, adverse effect on access to the monument for
the duration of construction activities.

COMMENT
County requests to see preliminary realignment of Muir Woods Road to determine feasibility. Muir Woods Road shall meet County roadway standards (http://library.municode.com/index.aspx?clientID=16476&stateID=5&statename=California)
A construction phasing plan for the MWR realignment shall be developed now to minimize impact on existing access to the monument during construction,

Note that any work within Redwood Creek requires a creek permit from the County of Marin and other state and federal agencies, depending on scope of work. Any work within Redwood Creek shall be defined at this phase. Cost estimate for the project shall include application, review and inspection fees from the County of Marin.

All proposed work shall meet all state and federal accessibility requirements.

In addition, attached please find additional comments from DPW's Traffic and Transportation Division.

Feel free to contact me at any time with questions/comments at (415) 473-3770 or bdavidson@marincounty.org. Note I will be out on extended leave until April 2012, during this time please call Michel Jeremias at (415) 473-4398.

Thank you for the opportunity to comment.

Sincerely,

Berenice Davidson, PE
Senior Civil Engineer

Enclosure

c: Bob Beaumont
Craig Tackabery
Saaid Fakharzadeh
Dan Dawson

Gibson, Jeanene

From: Dawson, Dan
Sent: Thursday, November 03, 2011 1:52 PM
To: Davidson, Berenice
Subject: Traffic comments on GGNRA EIS

Hi Berenice,

Here are Traffic's comments for inclusion in the department's response letter. Let me know if you have any questions.

TRAFFIC OPERATIONS:

1. Under the "The Alternatives for Muir Woods national Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, under alternative 1., it is states that "The Entrance would be redesigned to enhance visitors experience, protect resources, and improve safety". Is the statement referring to traffic safety when it notes improve safety? If so are there records that indicate a traffic safety issue at the entrance.

2. Under the "The Alternatives for Muir Woods national Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, under Alternative 2, it states that "the entrance would be relocated to lower parking lot area and designed to accommodate a year-round shuttle service. The majority of parking would be removed". Removing parking at Muir Woods can create a safety issue for pedestrians who drive to the area and parking further away along Muir Wood Road and have to walk miles to access and or reach the entrance to the park. A parking demand study should be performed with existing condition and future proposed developments with pedestrian safety in mind.

3. Any configuration of Muir Woods Road or any other County maintained roads should be reviewed and approved by County of Marin, DPW staff.

4. Under the "The Alternatives for Muir Woods national Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, Under Alternative 1, It states that" A welcome center would be provided in the vicinity of State Route 1 and Highway 101 with visitors services including parking, shelters, restrooms, food service, and orientation to monument and regional park destinations." If this area to be developed to accommodate the above proposed amenities is in Manzanita Park and Ride, then parking and traffic impact studies should be conducted to address the various issues the area experiences today. For example due to the facilities proximity to on-ramp and off-ramp from and to US 101 and State Route 1, there is a high volume of traffic. The park and ride doesn't provide protected pedestrian crossing including continuous access from and to the parking area.

5. Pohono Park and Ride - same comment as #4, above.

6. The "The Alternatives for Muir Woods national Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, Under Alternative 1, It states that" A welcome center would be provided in the vicinity of State Route 1 and Highway 101 with visitors services including parking, shelters, restrooms, food service, and orientation to monument and regional park destinations." If this proposal is being considered for privately-owned property with multiple tenants, such as the Shoreline Center, then a parking study may be required and modifications to any approved development plans made through the Community Development Agency review process to the extent that operations of other businesses on that property would be affected by long-term parking for national park or other visitor shuttle services.

7. Various traffic control signs are seasonally posted by County of Marin, DPW staff to accommodate the Muir Wood Shuttle. These signs include but are not limited to directional signs, pedestrian warring signs and parking regulations. The signs are posted at Caltrans's Right of Way and other Cities such as City of Sausalito Ferry terminal. These signs should be incorporated in to EIS and made to be permanent to accommodate the Muir Wood Shuttle.

8. The 4th paragraph on Page 13 of the Summary Addition indicates that the management strategies include intelligent transportation systems. I couldn't find any details of employing ITS in this report. The last paragraph on page 141 of the VI, Part 3 indicates that Park Managers would continue to work with Caltrans and other agencies to employ tools to support the Muir Woods shuttle and other alternative transportation access to park sites.

9. Consideration may be given to installation of a changeable message sign (CMS), on Shoreline HWY (SR-1) near the intersection of Panoramaic HWY, informing visitors using their personal cars about the availability of parking at the entrance of Muir Woods National Monument. If parking lot is full, the sign would advise them to use shuttle and locations that they may park their vehicles. This issue may have already been considered; however, it is not included in discussions for improving the parking and shuttle program. Consideration may also be given to exploring possible areas for parking and using shuttle between the entrance of Muir Wood National Monument and Manzanita Parking lot.

Thanks,

Dan

Dan Dawson, AICP
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DEPARTMENT OF PUBLIC WORKS

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December 7, 2011

Superintendent
Golden Gate National Recreation Area
Attention: Draft GMP/EIS
Fort Mason, Building 201
San Francisco. CA 94123

Subject: Review of Golden Gate National Recreational Area Muir Woods National Monument – Draft General Management Plan and Environmental Impact Statement.

Dear Sirs,

We would like to thank you for the opportunity to review and comment on the Golden Gate National Recreation Area Muir Woods National Monument - Draft General Management Plan and Environmental Impact Statement, please find Marin County Department of Public Works' comments below:

1. See Volume I, Part 6, page 317, for the following statement.

To enhance the visitor experience and address congestion problems, permanent shuttle service to Muir Woods National Monument would be provided during peak periods throughout the year, supported by a new welcome center in the vicinity of the Caltrans Manzanita park-and-ride at State Route 1 and Highway 101, created in collaboration with Marin County, California state parks, and Caltrans.

We suggest revising the word "created" with "to be developed" in the following statement.

Also note that during the Comprehensive Transportation Management Plan (CTMP) process, no welcome center was created. CTMP developed several alternatives for the Visitor Center (not a welcome center) that did not have public support due to their scale.

2. See Volume II, Part 8, pages 218 and 219 for the following statements.

The park staff would also continue to work with the community and Marin County to manage parking and reduce traffic in Stinson Beach using congestion management tools. In the developed beach area, the parking lot would be replaced by a more sustainable parking facility. This would have a long-term, minor to moderate, beneficial impact on visitor access to the park, depending on the success of the congestion management efforts. Also at Stinson Beach, the park staff would explore ways to improve non-auto

access to the beach, such as promoting public transportation on weekends during the peak season.

Please elaborate on the "congestion management tools" that are to be used. Provide examples or possible suggestions for review.

Public Works - Traffic Operations Comments:

3. Under the "The Alternatives for Muir Woods National Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, under alternative 1, it states that "The entrance would be redesigned to enhance visitors experience, protect resources, and improve safety". Is the statement referring to traffic safety when it notes improve safety? If so, are there any records that indicate a traffic safety issue at the entrance?

4. Under the "The Alternatives for Muir Woods National Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, under Alternative 2, it states that "the entrance would be relocated to lower parking lot area and designed to accommodate a year-round shuttle service. The majority of parking would be removed". Removing parking at Muir Woods can create a safety issue for pedestrians who drive to the area and parking further away along Muir Wood Road and have to walk miles to access and or reach the entrance to the park. A parking demand study should be performed with existing condition and future proposed developments with pedestrian safety in mind.

5. Any configuration of Muir Woods Road or any other County maintained roads should be reviewed and approved by County of Marin, DPW staff. (Volume II, pages 218-219)

6. Under the "The Alternatives for Muir Woods National Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, Under Alternative 1, It states that "A welcome center would be provided in the vicinity of State Route 1 and Highway 101 with visitors services including parking, shelters, restrooms, food service, and orientation to monument and regional park destinations." If this area to be developed to accommodate the above proposed amenities is in Manzanita Park and Ride, then parking and traffic impact studies should be conducted to address the various issues the area experiences today. For example due to the facilities proximity to on-ramp and off-ramp from and to US 101 and State Route 1, there is a high volume of traffic. The park and ride doesn't provide protected pedestrian crossing including continuous access from and to the parking area.

7. Pohono Park and Ride - same comment as item 6, above.

8. Under the "The Alternatives for Muir Woods National Monument", Chapter 6, under Summary Tables for Muir Woods National Monument, Table 27, Under Alternative 1, It states that" A welcome center would be provided in the vicinity of State Route 1 and

Highway 101 with visitors services including parking, shelters, restrooms, food service, and orientation to monument and regional park destinations." If this proposal is being considered for privately-owned property with multiple tenants, such as the Shoreline Center, then a parking study may be required and modifications to any approved development plans made through Marin County's Community Development Agency review process to the extent that operations of other businesses on that property would be affected by long-term parking for national park or other visitor shuttle services.

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Feel free to contact me at (415) 473-4398 if you have any questions.

Sincerely,

Michel Jeremias

Michel Jeremias, PE
Interim Senior Civil Engineer

c: Bob Beaumont
Craig Tackabery
Saaid Fakharzadeh
Eric Steger
Dan Dawson

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

NOV 10 2011

Frank Dean
General Superintendent
Golden Gate National Recreation Area
Attention: Draft GMP/EIS
Fort Mason, Building 201
San Francisco, California 94123

Dear Mr. Dean:

NOAA's Office of Program Planning Integration (PPI) is providing comments to the National Park Service (NPS) on the *Draft General Management Plan and Environmental Impact Statement for the Golden Gate National Recreation Area* (GGNRA). Please find enclosed comments from two offices within NOAA, the National Ocean Service, Office of National Marine Sanctuaries, Gulf of the Farallones National Marine Sanctuary (on behalf of Superintendent Maria Brown), and the National Marine Fisheries Service (NMFS), Southwest Region, North Central Coast Office.

NOAA is pleased to be a co-trustee with the NPS in the management of this country's natural, historic and cultural resources, and we hope that the NPS finds our comments useful. Please do not hesitate to let us know if there are any questions we may answer for you. For questions regarding comments from the Gulf of the Farallones National Marine Sanctuary (GFNMS), please contact Karen Reyna at 415-970-5247 or karen.reyna@noaa.gov. For questions regarding comments from NMFS Southwest Region, North Central Coast Office, please contact John McKeon at John.McKeon@noaa.gov.

Sincerely,

Paul N. Doremus, Ph.D.
NOAA NEPA Coordinator

Enclosure

Comments on the Draft General Management Plan and Environmental Impact Statement for the Golden Gate National Recreational Area (GGNRA)

Comments from the National Ocean Service, Office of National Marine Sanctuaries, Gulf of the Farallones National Marine Sanctuary (GFNMS)

Thank you for the opportunity to review the Draft General Management Plan (GMP) and Environmental Impact Statement (EIS) for the Golden Gate National Recreational Area (GGNRA). The Gulf of the Farallones National Marine Sanctuary (GFNMS) manages the waters and submerged lands of GGNRA off the Coast of San Mateo and Marin Counties to the mean high tide, including the tidal waters and submerged lands currently adjacent to, and overlapping jurisdiction with GGNRA. Therefore, we plan to be an active stakeholder, partner and collaborator with the National Park Service (NPS) in the implementation of the GMP.

All comments provided herein discuss GFNMS' suggestions on strengthening the preferred alternative within the coastal zone adjacent to and overlapping with GFNMS as well as Alcatraz Island which shares the same populations of seabirds found in sanctuary waters. Comments include addressing ocean stewardship, climate change, and water quality; maintaining and where feasible, restoring the integrity and diversity of natural resources; and clarifying GFNMS jurisdiction and mandates as related to the implementation of the GMP. Comments are divided into two parts: 1) general comments on concepts in the draft GMP and EIS; and 2) specific suggested changes to the language in Volumes I, II and III.

1) General Comments

GFNMS supports elements of the preferred alternative that address coastal, estuarine and marine resources for both GGNRA (alternative 1) and Alcatraz Island (alternative 3). Additionally, there are several elements, areas and actions in alternative 2 that, if adopted as part of the preferred alternative can further enhance the coastal and ocean ecosystem of sanctuaries. The GMP does an excellent job of explaining the interpretive themes, associated resources and desired conditions in the management zones. This approach has clearly outlined the GMP preferred alternatives as compared to the other alternatives, and predominantly, has given the reader the ability to understand the subtle differences between the alternatives.

General comments provided below cover specific topics that can affect sanctuary resources, with a focus on clarifying and strengthening the preferred alternative. For example, there are several instances where the currently identified preferred alternative can be strengthened by adding elements of alternative 2. We urge NPS to incorporate GFNMS' suggestions into the final preferred alternative.

Boundary Adjustments

There are many benefits to both sanctuaries and NPS if GGNRA boundary modifications are pursued for the two locations that would overlap with sanctuary boundaries: the offshore ocean

environment in San Mateo County, which overlaps with the Monterey Bay National Marine Sanctuary; and Bolinas Lagoon in Marin County, which overlaps with GFNMS. Both of these areas are currently managed by GFNMS. These benefits include developed partnerships on emergency response, enforcement, education and interpretation and will likely result in a cost savings to the Federal government when sharing staff resources and physical assets. GFNMS supports the proposed boundary modifications, with the understanding that the goals and criteria for designating these areas need to be consistent with sanctuary mandates.

It is critical that NPS policies and management actions in these two areas are consistent with the National Marine Sanctuaries Act (NMSA). One of the goals of the NPS boundary adjustment stated in Volume I, page 102 is to "*strengthen the diversity of park settings and opportunities supporting the park purpose to encourage, attract, and welcome diverse current and future populations while maintaining the integrity of the park's natural and cultural resources.*" GFNMS was designated pursuant to the NMSA, the purposes and policies of which have a primary mandate of maintaining the natural biological communities, and protecting and where appropriate, restoring and enhancing natural habitats, populations, and ecological processes (16 U.S.C. §1431 et seq.). We can facilitate human use in sanctuaries to the extent such uses are compatible with the primary mandate of resource protection through innovative, coordinated, and community-based measures and techniques including inter-agency cooperative arrangements. However, maintaining, restoring and enhancing natural habitats where appropriate must be a priority in areas where GGNRA and sanctuaries overlap.

Through regulation, GFNMS and MBNMS prohibit certain activities that are inconsistent with the goals, objectives, mandates and policies of the NMSA. Additionally, we strive to ensure that human use does not impact natural resource restoration efforts, which includes both wildlife and habitat restoration. The boundary modifications description, criteria and determinations for Bolinas Lagoon seem to be consistent with sanctuary regulations and mandates. The San Mateo County offshore expansion area description and criteria also seem to be generally consistent. However, the determinations for the San Mateo County offshore expansion need additional language to ensure consistency with the mandates of the sanctuary. In Section 2 of this letter GFNMS has specific suggestions to strengthen the guidance for boundary modifications to be consistent with the NMSA by rewording the goals, and adding additional information related to the determinations for the San Mateo County offshore expansion.

Climate Change

GFNMS supports the planning approach for addressing climate change. The GMP does an excellent job of articulating key elements and administrative commitments to addressing climate change.

The executive summary states the following: *"Guidance on managing resources and visitation in the face of climate change builds upon NPS policy, current science, and the park's 'Climate Change Action Plan.' The goals are to 1) reduce CO2 emissions, 2) educate and interpret the processes for visitors, and 3) assess the impacts and respond to changing conditions.* Additionally, the GMP has identified climate change as an issue to be addressed by stating that, "*The general management plan will provide guidance on how to assess, respond to, and interpret the impacts of global climate change on park resources, and will identify objectives for*

reducing greenhouse gas emissions." However, the preferred alternative does not have any goals specifically related to climate change and the GMP does not provide a clear path on how GGNRA would interpret or respond to climate change. Although alternative 2 does have a visitor experience goal that addresses the implications of climate change, there does not appear to be programs or strategies that outline climate change education and interpretation.

The GMP has detailed information and analysis related to the carbon footprint, and it is clear that GGNRA is actively working to reduce CO_2 emissions. However, the preferred alternative shows an increase of the gross emissions of the entire park by 2% and the draft EIS shows that the majority of this increase is caused by increased visitor use of Alcatraz Island. Although a 2% increase is considered a minor adverse impact of the NPS carbon footprint, GFNMS recommends that NPS identify additional actions that will reduce CO_2 emissions such as alternative energy installations, and the use of low emission vessels and vehicles in order to remain consistent with the NPS goal to "reduce CO2 emissions".

We could not find identified public interpretation and education programs that highlight carbon emissions reductions within the park. It is important to incorporate this as an example of leadership in this area, as well as help the public understand ways they too can reduce emissions and that local, individual choices do influence the global problem of climate change. Under the Visitor Experience Goal of "*encouraging hands-on stewardship through visitor opportunities that promote personal health and responsibility*," GGNRA should consider interpreting its carbon footprint reduction, including green facilities, alternative energy, and alternative transportation.

Additionally, programs or strategies specific to climate change education, and assessing and responding to climate change are either missing or vaguely mentioned. It was difficult to find details behind some statements such as, "Reconnect fragmented habitat within and adjacent to the park to strengthen the integrity and resiliency of the coastal ecosystem to respond to climate change and urban pressures" or "Proactive management would build into the environment greater resiliency to climate change." Adding examples and/or strategies that are linked to these actions will strengthen the GMP.

GGNRA has many tools available. The National Park Service Climate Friendly Parks Program and Climate Change Response Strategy are excellent resources that outline ways to address some of these missing elements from the GMP. Neither of these is mentioned in the Summary Edition or Volumes I-III. If linkages to the strategy and program are identified in the GMP, then this would help the reader better understand the implementation strategies related to responding to climate change. At a minimum, the GMP should provide information on this national effort in the climate change section or refer to it as another NPS plan that guides implementation.

Furthermore, in Volume III, Implementation Planning, there is no mention of climate change plans or strategies even though there appears to be an administrative commitment to addressing climate change. Given that factors such as sea level rise, ocean acidification and storm surges could affect park operations, visitor use, and natural and cultural resources, we suggest that GGNRA conducts a Climate Vulnerability Assessment or a Sea Level Rise Vulnerability Study as part of implementation planning.

GFNMS has been and would like to continue to partner with GGNRA on addressing climate change in coastal areas. The sanctuary is a partner in the collaborative project, "Our Coast–Our Future," which will be providing an online decision support tool with interactive maps to plan for sea level rise and storm hazards along the Bay Area's outer coast by fall 2012, and in San Francisco Bay by 2014. These tools can be used to inform the aforementioned assessments.

In summary, in order to be consistent with the key elements of the GMP and NPS administrative commitments related to climate change, GFNMS recommends that:

1) The preferred alternative include specific NPS actions planned for addressing climate change and reducing CO_2 emissions;
2) The visitor experience goal related to climate change from alternative 2 is added to the preferred alternative; and
3) NPS consider specific language changes or additions throughout the document that strengthens and clarifies information related to climate change, as outlined below under Alcatraz Island and in Section 2 of this letter.

Ocean Stewardship

GFNMS supports the four ocean stewardship goals and associated management strategies and suggests only minor edits to strengthen this plan, which are covered in Section 2 of this letter.

Water Quality

GFNMS supports all actions that protect coastal streams from erosion and restore riparian habitat. We encourage NPS to adopt elements of alternative 2 that protect and improve water quality in the creeks that drain into Sanctuary waters. Improving water quality in areas of management along coastal streams and land use in the coastal zone including Easkoot Creek, Slide Ranch, Muir Beach and Rancho Corral de Tierra helps protect sanctuary resources.

GFNMS regulations prohibit discharging or depositing any material or other matter directly into the Sanctuary from the land. Regulations also prohibit discharging or depositing any material or other matter from beyond the boundary of the Sanctuary that subsequently enters and injures a sanctuary resource or quality [15 CFR § 922.82 (a)(2)]. It is critical that any land uses within GGNRA along the shoreline have clean discharges. Through implementing several water quality and habitat improvement elements in alternative 2, NPS can help prevent both point source and non-point source surface runoff, and thus avert potential discharges that can injure a sanctuary resource or quality. Actions that improve offshore water quality should be incorporated into the preferred alternative.

Alternatives for Alcatraz Island

GFNMS supports alternative 3 (preferred) for the island perimeter and offshore bay environment including the strategy to protect colonial nesting birds and intertidal habitat, and interpret the island's evolving cultural and natural history. The overview of the preferred alternative also does an excellent job of explaining the linkages of the island's natural history to current NPS management, which is mirrored in the key elements of alternative 3. GFNMS recommends that

NPS consider adding an additional acknowledgement of the current NPS management of the island for natural resources by adding a second bullet under Fundamental Resources And Values for Alcatraz Island (Volume I, Page 19). Suggested language could include the following: Island Perimeter and Offshore Bay Environment – The waters, intertidal habitat, cliffs and wildlife of Alcatraz Island include an opportunity for visitors to learn about the natural history of San Francisco Bay.

GFNMS has a program dedicated to the protection of seabirds, The Seabird Protection Network, which began in 2006. The Network chapter that spans from Bodega Head to Point Sur specifically aims to reduce human disturbance to seabirds at coastal breeding and roosting sites in order to improve the survival and recruitment of seabirds by targeting the three main sources of these disturbances: boats, planes and humans on foot. Annual funding for education and outreach is provided, and this is also a partnership program with state and federal agencies, including National Park Service. GFNMS welcomes an ongoing partnership for seabird protection and would welcome the addition of a San Francisco Bay chapter that addresses seabird disturbance on Alcatraz Island.

The program tracks disturbances through monitoring. Monitoring data has shown that both motorized and non-motorized vessels can cause a disruption to breeding activities, and that boats have caused the most severe observed impacts to seabird colonies by approaching in close proximity. According to a report released in 1998 by H.R. Carter et al., seabird population responses to preventing disturbances by boats could include increased breeding successes, population size and roosting use.

GFNMS supports the approach of NPS to address user capacity as it relates to addressing visitor-caused bird disturbance. The table in Volume III, page 8 does an excellent job of identifying the indicators of disturbance, the monitoring strategy and the associated potential management strategies. If the identified strategies are implemented, then benefits to seabird populations would help compensate for injuries to seabirds from oils spills and other anthropogenic causes by speeding and ensuring natural population recovery in the near future.

GFNMS strongly supports the creation of a sensitive resource zone that prevents vessel approach extending 300 feet from Alcatraz Island as depicted in the map for alternative 3 (Volume I, page 173). Demarcation of this zone by the use of warning buoys will be key to ensuring compliance. Section 2 of this letter provides additional details regarding the costs for installation and maintenance of these types of buoys.

GFNMS also supports the concept for additional interpretation opportunities that are articulated in alternative 2 for Alcatraz Island, which states, "*Visitor experiences would include outdoor learning, and natural and cultural resource stewardship programming delivered in partnership with Bay Area nonprofits…visitors would be able to more freely explore, discover, and experience nature reclaiming Alcatraz Island, and understand the role the island plays in the broader marine ecosystem (reaching from San Francisco Bay to the Farallon Islands) as a result of its strategic location.*" Alcatraz Island also provides an excellent platform to educate visitors about any use of alternative energy on the Island. NPS should consider developing an alternative energy plan for Alcatraz Island. If NPS is planning to use alternative energy, it provides a key

opportunity to demonstrate leadership in addressing and reducing CO_2 emissions. GFNMS urges NPS to adopt this aspect of alternative 2 into the preferred alternative.

Alternatives for Park Lands in Marin County

Stinson Beach-Bolinas Fairfax Rd: Although alternative 1 (preferred) states plans to continue to work on flooding and water issues with local community and authorities and manage natural areas to protect and restore coastal ecosystems, there is no mention of implementing the plan for Easkoot Creek Restoration at Stinson Beach or the Locally Preferred Plan to restore Bolinas Lagoon, which was developed by a partnership with the U.S. Army Corps of Engineers, Marin County Open Space District and the local community. The Locally Preferred Plan aims to minimize the adverse human impacts to Bolinas Lagoon, thereby promoting the natural, dynamic processes of the estuarine environment. One of the actions in the Locally Preferred Plan is to investigate the use of GGNRA Stinson Beach lands to improve floodplain function for Easkoot Creek. Alternative 1 may be addressing this, but it's not clear in the GMP.

It is clear in the GMP that alternative 2 will contribute to restoration of natural processes at Bolinas Lagoon, but that contribution is not well defined, as it relates to the Locally Preferred Plan. GFNMS recommends clarifying how the actions in alternative 1 relate to the Locally Preferred Plan and restoration of Easkoot Creek and how that differs from alternative 2. Additionally, GFNMS encourages NPS to link to the "Our Coast–Our Future," which by Fall 2012, will be providing an online decision support tool with interactive maps to plan for sea level rise and storm hazards in this area. The use of this tool could influence any restoration that NPS plans for this area. For the next year, GFNMS has worked with our non-profit partners to secure a part-time staff person for implementing the Locally Preferred Plan. We would like to partner with NPS on planning for projects that mutually benefit habitats in both NPS and GFNMS jurisdiction.

State Route 1: GFNMS supports alternative 2 for the Scenic Corridor Zone (same as alternative 1, preferred), and supports the addition of the Natural Zone as described in alternative 2. We have been and will continue to review actions taken by Caltrans to manage the coastal road, and Caltrans is planning interpretive signage highlighting Bolinas Lagoon. Additionally, the Sanctuary California signage plan can fund signage highlighting sanctuary waters and the offshore waters of GGNRA. Finally, the siting of any new construction should first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration.

Slide Ranch: Although GFNMS supports environmental and farm education, NPS investment into improving facilities in this particular location should be weighed against information related to sea level rise, storm surges and known geologic conditions.

Lower Redwood Creek: GFNMS supports the actions in alternative 1 to manage the majority of the area to restore natural coastal ecosystem and riparian habitat and protect salmon through a collaborative community process to increase water storage capacity for use in dry season. GFNMS also supports actions in alternative 2 to further protect the creek's endangered salmon, which will provide greater protection to sanctuary resources.

Muir Beach: GFNMS supports the preferred alternative for the continued implementation of the wetland and creek restoration plan and NPS efforts to collaborate with agencies and the community to address water quality issues.

Offshore Marine Environment: GFNMS supports the actions in the preferred alternative for the Scenic Corridor Zone and Sensitive Resources Zone. The area off Point Bonita, at Bird Island, is now home to a Common Murre colony. Brandt's Cormorants have also been observed nesting in this area. Most of the cormorant nests are on the west side along the flatter top portion of the rock. This is an emerging colony of seabird species that are well below their historic numbers. We agree that visitation should be highly restricted to protect seabirds that are easily disturbed by humans, and that park-approved research and monitoring should be the primary activity in this zone so that breeding success and causes of disturbance can be assessed. It is unclear in the GMP if this zone will include demarcation in offshore waters through the use of warning buoys, such as area offshore of Alcatraz Island or if restrictions will be land-based.

GFNMS has a Seabird Technical Advisory Committee, composed state and federal agencies including GGNRA, which advises us on actions to protect and restore seabirds. The Committee advised us to recommend vessel "no-go" zones, defined by the state of California as special closure around the ten key seabird breeding and roosting colonies, and provided a 1000 ft closure distance recommendation. These actions would eliminate 91% of disturbance and 95% of flushing (causing birds to fly), according to U.S. Fish and Wildlife monitoring data. One of the ten locations was Bird Rock off Point Bonita. This recommendation specifically includes non-motorized vessels.

Additionally, the breeding and nesting times (including nest prospecting and pre-nesting activities) for the two main populations of seabird species near Point Bonita, Brandt's Cormorants and Common Murres, is November to August. Both species can additionally benefit by protection from human disturbance during the non-nesting season. In particular, Brandt's Cormorants need places to rest and dry their wings and year-round protection can provide these additional benefits. Therefore, NPS should consider addressing both boat-based and land-based targets and choose a distance and timeframe that will provide the greatest protection when determining how best to implement the protections for this zone.

Alternatives for Park Lands in San Mateo County

Pedro Point and Devil's Slide: GFNMS supports zoning the Devil's Slide Area west of Highway 1 as a Sensitive Resources Management Zone as identified in alternative 2, to protect the breeding Common Murre and Brandt's Cormorant colony on Devil's Slide Rock and expanded habitat on the mainland. This colony was completely abandoned in 1988. As a result, in 1996, a project to restore the Murres to Devil's Slide Rock was launched. The project used social attraction, with decoys, calls and mirrors to attract birds back to the abandoned colony. The funding was approved as part of the Apex Houston oil spill restoration fund, along with monitoring for success at the rock. Since then, over $ 6 million dollars of restoration funds have been spent on this colony and the Luckenbach restoration plan will continue funding the restoration of this colony for the next 20 years.

The restoration effort at Devil's Slide Rock has yielded successes with breeding pairs returning to the rock by the hundreds and expanding to the adjacent cliffs on the mainland from Grey Whale Cove to Pedro Point. However, the biologists monitoring this colony and the colonies off of the coast of Marin identified human-based disturbance as one of the factors impeding recovery. The goal is to return the colony to 3,000 Common Murres, which was the estimated colony size in 1979. In order to achieve this goal it is critical to minimize human access to the rock and the surrounding cliffs. This area is currently prone to disturbances from aircraft and vessels, so it is critical to prevent adding an additional stressor to this colony. We recommend that the preferred alternative includes specific actions to protect Devil's Slide Rock and the surrounding coastal bluffs, and any proposed coastal access next to Highway 1 is constructed in a way that assists, and does not jeopardize this ongoing restoration project.

Upon review of the GMP natural resource goals in alternative 1, we believe that creating a sensitive resource zone is actually consistent with this alternative. The GMP goals for natural resources are different between alternative 1(preferred) and 2, which we can only assume is the driver behind designating the zones in each alternative. Alternative 1 has a goal to "maintain the integrity and diversity of natural resources and systems" whereas alternative 2 aims to "optimize recovery of special status species and survival of wide-ranging wildlife." Because restoration is already underway in the area adjacent to this zone, limiting access will help to "maintain" the current diversity of this colony.

Additionally, the GMP is not completely clear about the actual difference between alternative 1 and 2. The table in volume 1 on page 285 shows that the actions for Pedro Point, Devil's Slide, and San Pedro Mountain are the same for alternatives 1, 2, and 3. If this table is correct, then the west side of highway 1 as depicted in the alternative 2 map (Volume I, page 253), which shows this area as Sensitive Resources Management Zone as identified in alternative 2, should be the same as alternative 1.

Furthermore, there is a concerted effort by San Mateo County, US Fish and Wildlife Service, GFNMS, and other local associations to develop a coastal trail on highway 1 that includes either an interpretative bird blind or a pedestrian/bike tunnel in this area in order to prevent coastal access west of highway 1 that would result in human-caused disturbance to this colony.

Finally, alternative 2 is the most consistent with how GFNMS and the California Department of Fish and Game manages and protects the area offshore of Devil's Slide mainland. The special closure at Devils Slide is one of the largest in the State and was drawn to encompass the mainland and prevent human-cased disturbance to the cliffs. Additionally, the Seabird Protection Network has invested significant staff resources into educating coastal and ocean users who frequent this area about the sensitive colony that exists both on the rock and the mainland both within and outside of the state-designated special closure.

Therefore, for several compelling reasons, GFNMS urges to NPS change the area from Pedro Point to Gray Whale Cove off the San Mateo Coast from a "Natural" zone to a "Sensitive Resources Management Zone" as it is shown and defined in alternative 2.

Rancho Corral de Tierra: GFNMS recommends NPS partner with the surrounding land managers to restore the creek corridors, reconnect them to the ocean, and restore anadromous fish passage.

Draft EIS

The draft EIS did an excellent job of describing the existing environment of GGNRA and the potential environmental consequences related to implementing the alternatives in the management plan. The information is well organized and detailed information on specific impact topics and the reasons that each was retained or dismissed from further evaluation is clear. GFNMS has minor suggestions to clarify and improve information, which is provided below in Section 2 of this letter.

2) Specific Suggested Changes

The text below provides comments on specific additions and deletions to the GMP and EIS as proposed by GFNMS. ~~Strikethrough~~ text is proposed for deletion. Text in [brackets] is proposed for addition.

Multiple Locations

The Indices at the back of Volumes I, II, III refer readers to pages that do not correlate with the topic listed. We found this discrepancy when conducting a search for the topic "Climate Change" and found instances where the words are mentioned in the document, but it's not in the indices; and/or the sections that cover climate change have the wrong pages listed (i.e. the carbon footprint section starts on pg 25 of Volume II, but the indices direct readers to page 26).

- GFNMS recommends checking the indices for accuracy and consistency before issuing the final draft.

Summary Addition, Pg 29 under, Preferred Alternative Projects, Stinson Beach North to Bolinas–Fairfax Road and Volume I, Page 203 under Stinson Beach North to Bolinas–Fairfax Road:

- GFNMS recommends the following addition: …Sustainable new facilities would replace deteriorated restrooms, showers, picnic areas, and parking lots. [The siting of any new facilities would first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration.]
- GFNMS recommends the same addition to page Volume I, 235 since alternative 2 is similar to alternative 1: …As in alternative 1, sustainable new facilities would replace deteriorated restrooms, showers, picnic areas, and parking lots. [The siting of any new facilities or relocation of existing would first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration].

Executive Summary, Volume I (Management Plan)

Page 17, under
Coastal Ecosystems

- GFNMS recommends clarifying that marine habitats are nearshore by adding the following: Golden Gate National Recreation Area contains a rich assemblage of coastal native plant and animal habitat that includes forests, coastal scrub, grassland, freshwater, estuarine and [nearshore] marine habitats, beaches, coastal cliffs, and islands.

Page 28, under Issues to be Addressed, Visitor Access: Transportation and Trails

- GFNMS recommends that the GMP states that access could also be changed due to increased flooding, storms, erosion, etc. as a result of climate change and GGNRA will evaluate existing and proposed coastal access for long-term suitability.

Pages 29, Sustainable Natural Resource Preservation and Management paragraph 3, and 129, Ocean Stewardship Introduction paragraph 3, contain slight variations of the same concepts, but the wording changes between the two results in different interpretations. Page 29 states, *"Ocean resources, including natural marine resources and submerged cultural resources, are at risk due to a variety of threats. Global climate change has begun to cause sea level rise, change storm patterns, and affect ocean acidification."* Page 129 states, *"Ocean resources, including natural marine resources and submerged cultural resources, are at risk due to a variety of threats. Climate change will cause sea level rise, changing storm patterns, and ocean acidification."*

- GFNMS recommends the following suggested edit for both for consistency: Ocean resources, including natural marine resources and submerged cultural resources, are at risk due to a variety of threats. The effects from global climate change, [sea level rise, change[s in] storm patterns, and ~~affect~~ ocean acidification, confounds many of these threats~~has begun to cause~~.

Page 35, under Relationship Of This Plan To Other Plans, there isn't mention of the forthcoming NPS Green Parks Plan or the NPS Climate Friendly Parks Program.

- GFNMS recommends that this may be one of the appropriate places to mention Climate Friendly Parks, since as stated above it is not included elsewhere currently.

Page 102, under Boundary Adjustments, first paragraph below goals

- Since the proposed boundary adjustments move GGNRA jurisdiction into waters overlapping to sanctuaries, and the primary mandate of the sanctuaries is to both protect and where appropriate, restore natural and cultural resources, GFNMS suggests the following addition to the first goal: Strengthen the diversity of park settings and opportunities supporting the park purpose to encourage, attract, and welcome diverse current and future populations while [maintaining the natural biological communities, and protecting and where appropriate, restoring and enhancing natural habitats, populations, and ecological processes and] maintaining the integrity of the park's ~~natural and~~ cultural resources.

Page 104, under Offshore Ocean Environment, San Mateo County, Determinations

- In order for GFNMS to fully support a boundary modification, we suggest the addition of the following language: Management of the areas added to the park boundary would be guided by the park's ocean stewardship policy [, the mandates of the National Marine Sanctuary Act] and the primary management purposes identified in the California state

leases that the park retains over other portions of the offshore ocean and bay environment in San Francisco and Marin counties.

Page 109, under Bolinas Lagoon, Marin County, Description

- GFNMS suggests the following addition: It is managed by Marin County Open Space District as the Bolinas Lagoon Open Space Preserve [and the Gulf of the Farallones National Marine Sanctuary].

Page 118, third sentence

- GFNMS suggests the following edit: The park staff would interpret climate change science and develop management strategies, which may include ~~predicting and~~ projecting expected changes.

Page 118, under Management Strategies:

- GFNMS suggests the following edit: ~~Predictions~~ [Projections] and observations of other climate change effects, including [changes in] weather, local climatic conditions, and phenology, would be gathered. Based on this information combined with the results of targeted monitoring, park managers could position themselves to respond and adapt according to changing conditions—~~a sort of~~ [functioning as an] early detection system.

Page 118, Natural Resources

- GFNMS suggests adding a bullet conveying the following: Determine which species and habitats are most vulnerable to the effects of climate change (e.g., changes in temperature, increased storms, flooding and erosion, and ocean acidification) and evaluate the appropriateness of added protection for these resources.

Page 120 under Visitor Experience, top bullet

- GFNMS suggests the following edit: Remove existing visitor facilities and discontinue recreational uses where continued use is unsafe, infeasible, or undesirable due to changing environmental conditions. [Do not allow for new construction in areas that are subject to changing environmental conditions].

Page 129 under Ocean Stewardship, Introduction, end of third paragraph

- GFNMS suggests the following additions: Water quality is threatened by pollution from [surface] runoff, landslides, shoreline development, sewage outfalls, vessel [use and] traffic, oil [, chemical and cargo] spills, and contaminants exposed from dredging.

Page 130 under strategy 2.3

Currently there are no special closure areas within GGNRA boundaries and one within the proposed boundary modifications to include .25 miles offshore of San Mateo County coast.

- If GGNRA is expanded to include the area offshore of the San Mateo County coast, then GFNMS suggests that a sensitive resource zone is designated for the area of Devil's Slide Rock and Mainland from Gray Whale Cove to Pedro Point.

Page 130 under Strategy 2.4

- GFMNS suggests the following changes: Park staff will engage in restoration of estuarine

and coastal wetland habitats and will assess [the long-term viability and cost effectiveness of any] new restoration opportunities in ~~response to changes from~~ [taking present and future] climate change [influences into consideration].

Page 171, Summary of Costs for Alternative 3 (Alcatraz Island)
One-time capitol costs need to include the cost of installing demarcation buoys. Although this is not identified as a cost related to historic preservation, it is an investment that will need to be made in order to ensure compliance with the sensitive resource zone, as it is currently defined in alternative 3. The cost per buoy ranges from $3,000 to $5,000 depending on the mooring tackle used and the method of installation. Inspection of demarcation buoys must be conducted at least every six months, and it should be assumed that buoys and their associated tackle will need part replacements and maintenance on an ongoing basis. Maintenance costs per buoy can range from $1,000 to $5,000 annually depending on the needs of each buoy. GFNMS can provide information on mooring tackle vendors, methods and lessons learned from installation and maintenance experiences.

- GFNMS recommends that an additional section or line item for the installation of demarcation buoys is added.

Page 203-204, under Stinson Beach North to Bolinas-Fairfax Road, Diverse Opportunities Zone

- GFNMS suggests the following edit: The park would continue to work with the Stinson Beach Community Services District, Marin County, [Gulf of the Farallones National Marine Sanctuary] and the local community to find sustainable solutions to flooding and floodplain function, water use, water quality, and wastewater treatment, and sea level rise related to climate change where these affect park resources.

Page 204, under Stinson Beach North to Bolinas-Fairfax Road, Natural Zone

- GFNMS suggests the following edit: Partnerships with neighboring [ocean and] land managers would be strengthened to achieve these goals across the broader landscape.

Page 204 under State Route 1 and Panoramic Highway, end of second paragraph

- GFNMS suggests the following addition: Improvements would fit with the rural character of the area. Park managers would seek to minimize impacts to natural resources caused by road use, maintenance, and drainage. [The siting of any new construction would first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration.]

Page 204 under Slide Ranch, Diverse Opportunities Zone

- GFNMS suggests the following edit: This area would be managed to enhance the environmental and farm education center and provide improved facilities for public day use of the site, including a picnic area, trail access, and a scenic overlook. Improvements would take into account the dynamic geologic conditions of the site. [The siting of any new construction would first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration.]

Volume II (Draft EIS)

Page 25, Carbon Footprint

- This section should further discuss a comparison with the 2008 emissions inventory results to give the reader a clearer picture of the current existing environmental conditions. The format of the 2008 table doesn't match with the 2006 pie charts so it is hard to compare the two. It would be useful to include a table for 2006 also.

Page 29 under Sea Level Rise and Coastal Vulnerability:

- It is important for NPS to articulate that mean sea level rise is not the immediate threat to resources. Increased storms, related coastal flooding from storm surges and erosion are more likely to happen during the 20-year GMP cycle. This should be highlighted here also.

Page 29 under Sea Level Rise and Coastal Vulnerability

- In order to adequately capture the discussion in this section regarding increased storms, flooding and erosion, GFNMS recommends that the title is changed as follows: Sea Level Rise[, Flooding,] and Coastal Vulnerability

Page 47 under Biological Resources, Habitat (Vegetation And Wildlife), Marine and Estuarine, Intertidal Zone, first full paragraph

- This section should be the driver of the potential environmental consequences section. GFNMS suggests the following edits to better characterize the wildlife and link the affected environment to the potential environmental consequences section: Birds forage in the intertidal zone at low tide or [nest and] roost in the cliffs just above the shore [or on nearshore islands off the Marin and San Mateo County coast].

Page 58 under Affected Environment, Birds

- The discussion about colonial waterbirds should include information about the colony at Bird Rock and Point Bonita as well as the Devil's Slide mainland from Point Pedro to Gray Whale Cove. This section should be the driver of the potential environmental consequences section. If information is missing in the affected environment section, then the analysis of environmental consequences will be incomplete. Information about both these colonies is available through the US Fish and Wildlife Service.

Page 180 under Environmental and Safety Division

- GFNMS suggests the following edit to better clarify the NPS sustainability programs: This group is responsible for environmental protection and occupational health and safety; the staff consists of 1% of the total park workforce. The division manages the park's sustainability programs and is central to addressing ~~climate change~~ [carbon emissions mitigation].

Page 182 under Natural Resources Management and Sciences Division

- GFNMS suggests the addition of the following sentence to the end of this section: [This division is central in addressing the effects of climate change on park resources and habitats.]

Page 212, Natural Resources, Analysis

- GFNMS supports the conclusion of the analysis of natural resources comments to all alternatives of GGNRA. However, the addition of several elements identified in alternative 2 would result in a greater benefit to both NPS and GFNMS resources.

Pages 233-234, under Water Resources and Hydrologic Processes and page 314, under Social and Economic Environment

- Analysis for both the water resources and the social and economic environment show there are greater benefits in alternative 2, as opposed to alternative 1. We understand that funding and staff resources may be the limiting factor to restoring coastal, estuarine and stream habitats, but during a 20-year plan some of the restoration activities may rise to a critical need due to other factors related to climate change. GFNMS urges NPS to review all the projects that can improve water quality and consider moving these to the preferred alternative.

Pages 238-245 under Natural Resources, Biological Resources

- Analyses of all three alternatives in this section related to habitat (vegetation and wildlife) have information missing about the waterbird colonies off the coast of the Devil's Slide area. This information is critical for determining if the different types of protection zones for the Devil's Slide mainland will result in a change to the conclusion regarding potential impacts between the alternatives.

Volume III (Implementation Planning)

Page 25 under Implementation Planning

- GFNMS recommends adding a bullet under either "Natural Resources" or "General" on page 26 that that commits GGNRA to conducting a Climate Vulnerability Assessment or a Sea Level Rise Vulnerability Study as part of implementation planning.

Page 27 under Natural Resources, General, second paragraph

- GFNMS suggests the addition of the following language: During design and construction periods, NPS natural and cultural resource staff would identify areas to be avoided and would monitor activities. [The siting of any new facilities would first be evaluated for long-term viability and cost effectiveness, taking present and future climate change influences into consideration].

Page 29 under Threatened and Endangered Species and Species of Concern

- GFNMS suggests the following addition to Restoration or monitoring plans would be developed as warranted. Plans should include [evaluation of long-term viability], methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.

Page 39, Natural Resources

- GFNMS suggests the following additions: Those plans and projects that are most relevant to natural resources and could contribute to cumulative impacts on this topic include the

Redwood Creek Watershed Vision and various restoration projects in the watershed; county transportation plans; management plans for various California state parks; the Point Reyes National Seashore draft general management plan and fire management plan; other plans and projects at Golden Gate National Recreation Area, such as the fire management plan, dog management plan, and the redevelopment of Fort Baker; the Gulf of the Farallones [and Monterey Bay] National Marine ~~Sanctuary~~ [Sanctuaries] plan; beach nourishment activities; regional land protection plans and activities such as Golden Lands, Golden Opportunities; the management of lands adjacent to the park; and past land use practices in the region.

Page 115, Other Federal Plans
The following changes are necessary in order to be consistent with the current management plan:

National Oceanic and Atmospheric Administration — Joint Management Plan for Cordell Bank, Gulf of the Farallones, and Monterey Bay National Marine Sanctuaries (~~2004~~ [2008])

- ~~After nearly three years of public input, issue prioritization, and recommendations from each site's Sanctuary Advisory Council, the National Marine Sanctuary Program is preparing draft management plans and an~~ [The Office of National Marine Sanctuaries released final revised management plans, regulations and a joint final] environmental impact statement for Cordell Bank, Gulf of the Farallones and Monterey Bay national marine sanctuaries. [The plans are the result of seven years of study, planning and extensive public input. The management plans offer a vision and course for protecting the rich marine ecosystems of three California national marine sanctuaries while continuing to allow compatible, sustainable human uses.] The plans include a review of resource protection, education and research programs, the program's resource and staffing needs, regulatory goals, and sanctuary boundaries.

  The three sanctuaries include Pacific Ocean waters that extend from Bodega Bay in the north to Cambria in the south and thus could impact or be affected by the Golden Gate National Recreation Area General Management Plan. The three management plans ~~have been~~ [were] prepared jointly because the sanctuaries are adjacent to one another, managed by the same program, and share many of the same resources and issues as well as many overlapping interest and user groups. The alternatives in the general management plan are consistent with these plans and articulate additional NPS actions that strengthen ocean stewardship within the area of influence.

Page 129, Relevant NPS Policies

- This section may be a good place to summarize the National Park Service Climate Friendly Parks Program and/or Climate Change Response Strategy.

Conclusion

GFNMS commends the National Park Service in providing an adequate range of alternatives with a clear goal, and specific objectives that were developed through the public process and looks forward to working with you as an active partner when implementation of the GMP begins. GFNMS appreciates this opportunity to comment on the Draft GMP, EIS and implementation

plan, and can provide additional information as needed for the issuance of the final documents. Please contact Karen Reyna at 415-970-5247 or karen.reyna@noaa.gov if you have any questions or comments.

THE PRESIDIO TRUST

November 4, 2011

Mr. Frank Dean, Superintendent
Golden Gate National Recreation Area
Attn: Draft GMP/EIS
Fort Mason, Bldg. 201
San Francisco, CA 94123

Dear Superintendent Dean:

The Presidio Trust (Trust) has reviewed the **Golden Gate National Recreation Area and Muir Woods National Monument Draft General Management Plan/Environmental Impact Statement (GMP/EIS)** and is pleased to provide the attached comments for consideration in the National Park Service's (NPS) Final GMP/EIS. Our review and comments are focused primarily on issues originating from the Trust's legislative authority, jurisdiction, and contributions pertaining to the Golden Gate National Recreation Area (GGNRA) as reflected in the GMP/EIS. Our comments are provided pursuant to the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality's NEPA Implementation Regulations at 40 CFR 1500-1508, and the Trust's policies and procedures on environmental quality and control at 36 CFR part 1010.

The Draft GMP/EIS only addresses NPS-administered lands within the legislative boundaries of the GGNRA and Muir Woods National Monument. The plan does not cover park lands that are under other management arrangements or are being managed with guidance from recently approved land-use management plans and environmental documents, both categories of which apply to Area B of the Presidio, which is under Trust jurisdiction as is being managed in accordance with the 2002 Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco. The environmental analysis in the Draft GMP/EIS also suggests, and the Trust concurs, that management actions presented in the plan would have minimal impacts on Trust-managed lands, other than long-awaited improvements to transportation to the Presidio, which would have additional environmental review. As our lands are outside of your planning process, our comments are minor and are generally focused on the Presidio. Nonetheless, we would very much appreciate having our comments addressed in the Final GMP/EIS.

34 Graham Street, Post Office Box 29052, San Francisco, California 94129-0052
415/561-5300 Fax 561-5315 presidio@presidiotrust.gov

We wish you success as you plan for the future of NPS lands within the GGNRA. As a fellow federal manager with administrative jurisdiction within the park, we offer our partnership and expertise during the course of your general management planning process. If you have any questions, please feel free to contact me at 415-561-5300.

Sincerely,

Craig Middleton
Executive Director

PRESIDIO TRUST COMMENTS ON THE GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT DRAFT GENERAL MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT
November 4, 2011

Volume 1, Part 1: Background

Pages vi and 9, The Planning Area, last paragraph. These sections state that GGNRA "sites with recent management plans are not addressed in this plan." Specifically included in this category is "the Presidio of San Francisco." To avoid misunderstanding in the remainder of the GMP/EIS, references to resources within the Presidio should be limited or qualified based on expected impacts from the planning area. As written, the document is confusing and could give the reader a false impression that the Presidio is actually within the planning area. Specific recommendations to reduce or eliminate references to Presidio resources are included in the comments below.

Page 37, Relationship of This Plan to Other Plans, Presidio General Management Plan Amendment and Environmental Impact Statement, third paragraph, second sentence. The assertion that the GMPA remains the foundation plan that guides the Trust's planning and decision making is incorrect. The Presidio Trust Management Plan updates and succeeds the GMPA as it applies to Area B, the area under the jurisdiction of the Trust. The sentence should be corrected as follows:

The general management plan amendment ~~remains the foundation plan that~~ ***initially*** *guide**s**d the Trust's planning and decision making.*

To assist the NPS, a brief discussion that clarifies the relationship of the NPS' GMPA to the Trust's PTMP has been prepared for the purposes of the GMP/EIS and is provided in Attachment 1.

Page 39, Current Plans for Other Park Areas not Managed by the National Park Service, Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco, last sentence of first paragraph. The statement that the GMPA remains as the management plan for Area A is parenthetical to the discussion of the PTMP and should be deleted.

Volume II, Part 7: The Affected Environment

Page 28, Soils and Geologic Resources and Processes, Geology, last sentence of final paragraph. The rare plants found at the Presidio are not within the GMP planning area (i.e., not part of the existing environment). Because the plants could not be affected by implementation of any of the alternatives in the plan, the plants should not be included in the discussion.

Page 38, Freshwater Resources, Surface Water, San Francisco City and County Watersheds, entire paragraph. The discussion on watersheds is limited to the Presidio, which

is not part of the affected environment, and should be omitted. In addition, the discussion incorrectly implies that the Presidio East watershed is managed by the NPS. If the extraneous discussion is not deleted, the second and third sentences of the paragraph should be revised as follows:

The ~~Park Service manages~~ ***GGNRA includes*** *lands in San Francisco draining to San Francisco Bay, the Golden Gate Channel, and the Pacific Ocean. Tennessee Hollow,* ***managed by the Presidio Trust,*** *and Lobos Creek, both ~~of which are~~ within ~~Golden Gate National Recreation Area and~~ the Presidio of San Francisco (Presidio), remain in a relatively nonurban state and are significant water resources in the Presidio. The Tennessee Hollow stream in the Presidio East watershed, is the main fresh water source for the Crissy Field marsh, a recently completed wetland restoration project.*

Pages 42 and 43, Freshwater Resources, Water Quality, San Francisco and San Mateo Counties, first paragraph and first three sentences of second paragraph. The Presidio is not within the GMP planning area and much of the discussion is unnecessary to understand the effects of the alternatives. The discussion indicates that water quality monitoring has been conducted "through a contract with the Presidio." The Presidio is not a management agency such as the Trust or the NPS, but is a park site. An appropriate reference should be provided. The discussion also mentions that basic water quality parameters have been collected by the NPS in Area A and by the Urban Watershed Project in Area B. The monitoring in Area B by the Urban Watershed Project was conducted for and funded by the Trust. Therefore, as the NPS credits itself, the contribution of the Trust should be acknowledged as well. Finally, the Urban Watershed Project has since been replaced by Project WISE (Watersheds Inspiring Student Education) through the Golden Gate National Parks Conservancy. The Trust also regularly tests water quality throughout Trust-managed watersheds.

Page 83, Cultural Resources, Introduction, third sentence of first paragraph. The introduction incorrectly states that the park's planning area covered by the GMP includes 5 national historic landmarks. The Presidio of San Francisco, a national historic landmark, is not included in the planning area. It is also stated that the park includes more than 700 historic structures. What is not mentioned is that over 450 of those structures are historic buildings managed by the Trust and located in Area B of the Presidio, outside the GMP planning area. It would be more accurate to account for only those historic assets under NPS jurisdiction and within the planning area, which is limited to 142 historic buildings as noted on table 12 on page 184.

The GMP/EIS as it is now written indiscriminately refers to cultural resources in very different geographic areas, some of which are not under NPS jurisdiction, and thereby overstates the NPS' management responsibilities. To avoid confusion and to be consistent with NEPA and Advisory Council on Historic Preservation guidance, it would be preferable if the document only addressed those resources in the relevant planning area and APE.

Pages 85-91, Cultural Resources, Table 5: Area of Potential Effect. The table should acknowledge that 80 percent of the Presidio of San Francisco National Historic Landmark is administered by the Trust. As it stands, it implies that the Presidio is managed solely by the NPS.

As various individual properties within the Seacoast Fortifications of San Francisco Bay are managed by the Trust, this should also be noted. The table should also disclose that the Crissy Field Ohlone District is not under the exclusive management jurisdiction of the NPS, as one of the two pre-contact archeological sites within the district is on land managed by the Trust.

Page 117, Visitor Use Experience, Diversity of Recreational Opportunities and National Park Experiences, Second Sentence of Last Paragraph and Figure 9, GGNRA Recreational Visitors by Year 1999-2009. The section mentions that the NPS and Golden Gate National Parks Conservancy team brings thousands of volunteers to the park for activities such as trail building, habitat restoration and conservation, and organized youth programs in the park. As the Trust pays for many of these activities, is an acknowledged partner of the Golden Gate National Parks Conservancy, and itself offers substantial opportunities for visitor involvement in park stewardship, and given that the discussion focuses on the park (and not the planning area), should not the Trust be acknowledged here as well?

Page 119, Visitor Use Experience, Visitor Use and Characteristics, Figure 9, GGNRA Recreational Visitors by Year 1999-2009. One of the biggest "backyards" of Bay Area residents who use the park lands for recreation and exercise is the Presidio, which accounts for more than 30 percent (approximately 5.0 million) of the mean annual visitation GGNRA-wide (approximately 14 million). The visitation trends provided are inflated and misleading because visitors to the Presidio (and other public lands within the park but not within the planning area) are taken into account, although the Presidio is not part of the affected environment. The visitor counts should explain the discrepancy, or visitation to non-GMP public lands should be subtracted from the total.

Page 122, Facilities for Maintenance, Public Safety, and Collections Storage, Management Strategies, Centralized Maintenance Facilities, first paragraph. NPS and Trust staffs have recently identified another location for a centralized maintenance facility at a location outside of the Cavalry Stables. The GMP/EIS should be updated to reflect those discussions.

Page 159, Transportation, San Francisco Park Lands, Public Transit, final sentence. The section mentions that the PresidiGo shuttle service to various GGNRA park sites and to downtown is operated by the Presidio Trust. The Trust appreciates the acknowledgement.

Page 160, Transportation, Park Transportation Network, Pedestrian, fourth paragraph. The discussion mentions that trail improvements are planned as part of the Trails Forever Program, a collaborative effort of the "Golden Gate National Parks Conservancy, the Presidio of San Francisco, and the park." The reference to the Presidio park site instead of the Presidio Trust, the management agency, is misleading. For simplicity and accuracy, the straightforward language excerpted from the Golden Gate National Parks Conservancy website (http://www.parksconservancy.org/our-work/trails-forever/) should be used to guide the correction:

The Trails Forever initiative is sponsored by the Parks Conservancy, the National Park Service, and the Presidio Trust.

Page 169, Transportation, Figure 29: San Francisco Transportation Network: Baker Beach, Presidio, Crissy Field. This figure has numerous errors. It does not accurately represent the PresidiGo route, MUNI 29 route, Bay Area Ridge Trail alignment or Letterman district buildings and roadways. The San Francisco National Cemetery is incorrectly labeled. It incorrectly depicts a transit route on Lombard Street west of Letterman Drive. The figure mislabels Mason Street and Old Mason Street, one of which no longer exists. The alignment of Merchant Road is incorrect. The legend incorrectly labels "GOGA" trails in Area B of the Presidio. The figure identifies parking areas for Area A but not for Area B; this information should be provided uniformly across area boundaries. Also, the figure identifies Area A as within the GGNRA GMP area, which it is not. The figure imprecisely refers to Area B as "Other Park Areas (including Presidio Trust)." It should acknowledge that Area B is entirely within the jurisdiction of the Presidio Trust.

Page 180, Park Management, Operations, and Facilities, Cultural Resources and Museum Management Division. The discussion overstates resources that are overseen by the division, as cultural resources within the Presidio of San Francisco National Historic Landmark are managed by Trust staff.

Page 181, Park Management, Operations, and Facilities, Visitor and Resource Protection Division, fifth sentence of second paragraph. The discussion should note that structural fires within the Presidio are handled by the San Francisco Fire Department and not the Presidio Fire Department.

Volume III, Part 11: Other Analyses and Statutory Considerations

Page 38, Cumulative Impact Analysis at Golden Gate National Recreation Area, Including Alcatraz Island, Methodology, fifth paragraph. No discussions with Trust staff took place to determine potential projects that may contribute to cumulative impacts, as no plans or projects within the Presidio are identified in the cumulative impacts analysis.[1] Presidio plans with actions that will have cumulative impacts include the PTMP, the Main Post Update to the PTMP, the Presidio Vegetation Management Plan (VMP), and the Presidio Trails and Bikeways Plan, to name a few. The inclusion of these plans for the Presidio at the geographic center of the GGNRA is necessary to permit a complete analysis of cumulative effects of the GMP, and their absence represents a serious omission in the analysis. The NPS is encouraged to review the Trust's planning and environmental documents[2] to determine those actions that contribute to significant cumulative effects of concern, and add them to appendix B in volume I for consideration in the analysis.

Page 39, Natural Resources. Presidio plans and projects will contribute to cumulative impacts on natural resources and have a direct relationship to the GMP. Plans and projects most relevant to natural resources within the Presidio include actions implementing the PTMP and Presidio

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[1] The CEQ Handbook advises that the "first step in identifying future actions is to investigate the plans of... other agencies in the area."

[2] Available at http://www.presidio.gov/trust/documents/environmentalplans/.

VMP, Tennessee Hollow watershed restoration, and restoration of Quartermaster Reach. These plans and projects are missing from this topic.

Page 42, Cultural Resources. Rehabilitation of Presidio buildings under the PTMP represents the largest historic preservation project underway in the nation today. Of the 750 buildings in the Presidio, 469 are on the National Register of Historic Places, mostly located in Area B. The Trust has rehabilitated more than 300 historic buildings in the Presidio and has received numerous preservation and design awards in recognition of its historic rehabilitation work. This work is highly relevant to the cumulative impacts analysis of cultural resources but is conspicuously absent. It is simply not possible for the GMP/EIS to provide an adequate analysis of cultural resources cumulative impacts without consideration of Trust projects.

Index, general comment. A review of the term "Presidio of San Francisco" on page 179 in the volume III index revealed that 3 of the 4 page entries for the term were incorrect. The index should be checked for accuracy.

ATTACHMENT 1
RELATIONSHIP OF THE PRESIDIO TRUST MANAGEMENT PLAN TO THE GENERAL MANAGEMENT PLAN AMENDMENT

The 1,491-acre Presidio of San Francisco was identified as a national park site in the 1972 legislation that created the GGNRA. The GGNRA legislation ensured that if the military deemed the Presidio excess to its needs, jurisdiction would be transferred to the National Park Service. The current General Management Plan for the GGNRA, approved in 1980, anticipated that the Presidio would come under the jurisdiction of the NPS if and when the Army left the Presidio. In 1989, the Presidio was designated for closure and in 1994 the U.S. Army transferred the Presidio to the national park system. In 1994, as part of the transfer, the NPS completed and issued a Final GMP Amendment for the entire Presidio setting forth concepts for managing its resources. In 1996, the Presidio Trust Act (16 USC 460bb appendix) gave jurisdiction of the 1,168-acre inland area of the Presidio known as Area B to the Presidio Trust.

Pursuant to the Trust Act, the Trust has the unique responsibility of ultimately eliminating federal government costs associated with the lands under Trust jurisdiction. To achieve these goals, the Trust is provided only limited annual federal appropriations, which decrease each year and end with FY2012. The Trust generates revenue by leasing rehabilitated buildings and retains these revenues to preserve and enhance the Presidio's resources as well as to operate and maintain the Presidio as a national park site in perpetuity.

The Trust Act directs the Trust to conform only with the purposes of the GGNRA Act and the "general objectives" of the GMPA.[3] Recognizing the need for an updated policy framework that would balance the concepts and principles of the GMPA with the superseding statutory requirements and mandates of the Trust Act, the Trust adopted the Presidio Trust Management Plan: Land Use Policies for Area B of the Presidio of San Francisco (PTMP) in 2002. During the course of the planning and environmental review process leading to the PTMP and its accompanying environmental impact statement, the Trust met regularly with the NPS to provide opportunities for input and discussion.

The PTMP supersedes the GMPA as it applies to the area under jurisdiction of the Presidio Trust. The GMPA remains the management plan for Area A. The PTMP describes the planning principles that help the Trust realize its goals of preserving and enhancing the park's resources, bringing people to the park, and making the lands under Trust jurisdiction financially self-sufficient. The PTMP sets forth land-use preferences and development guidelines for each of its seven planning districts.

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[3] As defined in Presidio Trust Board Resolution 99-11 dated March 4, 1999.

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November 28, 2011

Superintendent Frank Dean
Golden Gate National Recreation Area
Attention: Draft GMP/EIS
Fort Mason, Building 201
San Francisco, CA 94123

Dear Superintendent Dean:

Thank you for this opportunity to comment on the programmatic Draft General Management Plan / Environmental Impact Statement (GMP / EIS) for the Golden Gate National Recreation Area (GGNRA) and congratulations on achieving this significant milestone. On behalf of the San Francisco Public Utilities Commission (SFPUC), I am providing the following general comments on the GMP / EIS and specific comments referencing page numbers and/or sections are provided in the attached table.

This letter is organized into three major sections:

- **Background** information is provided on the SFPUC facilities and lands that could be affected by the proposals contained in the draft GMP / EIS, as well as applicable SFPUC plans and policies.
- **General Comments** are provided to articulate the SFPUC's concerns about the proposals contained in the draft GMP / EIS.
- **Adequacy of the Draft GMP / EIS** is discussed and our recommendations are provided to improve this EIS in keeping with the requirements of the National Environmental Policy Act (NEPA). Mitigation measures are proposed to avoid or minimize adverse environmental effects.

Background

The SFPUC provides sewer services to San Francisco residents and water to residents of four Bay Area counties. Providing our customers with high quality, efficient and reliable water and sewer services in a manner that is inclusive of environmental and community interests is our highest priority.

Wastewater Treatment System

Most of San Francisco is served by a combined storm sewer system, where stormwater, along with residential and commercial sewage, is directed to treatment plants prior to being released to the San Francisco Bay or Pacific Ocean. San Francisco's wastewater and stormwater that flow naturally towards the Pacific Ocean are collected and treated through the Oceanside Water Pollution Control Plant located in the Outer Sunset District adjacent to The Great Highway.

Lake Merced

Located in the southwest corner of San Francisco near Skyline and Lake Merced Boulevards, Lake Merced consists of four inter-connected freshwater lakes. The San Francisco Recreation and Park Department manages the recreational areas of the Lake under a 1950 agreement with the SFPUC. The SFPUC manages the water aspects of the lake. Lake Merced is an emergency source of water for the City of San Francisco to be used for fire fighting or sanitation purposes if no other sources of water are available.

Water Collection and Storage – Peninsula Watershed

The 23,000 acre Peninsula Watershed located in San Mateo County is used for water collection and storage in its three reservoirs. In contrast to the predominantly urbanized region surrounding it, the Watershed has been protected and managed to conserve natural resources, resulting in a unique setting with a variety of habitats that support the highest concentration of rare, threatened and endangered species in the nine-county Bay Area.

The Peninsula Watershed is a State Fish and Game Refuge under the control and enforcement of the California Department of Fish and Game. In addition, critical habitat in the Watershed was designated for the marbled murrelet (a California endangered and federal threatened species) in August 1995 under the Endangered Species Act. The attached map shows that the Peninsula Watershed is also designated as critical habitat for the California red-legged frog (Critical Habitat Unit SNM-1). The California Department of Forestry and Fire Protection (CAL FIRE) has identified the Watershed as a hazardous fire area.

Recreation activities are permitted on the Watershed east of the Crystal Springs and San Andreas Reservoirs near I-280. Over 200,000 people visit the Peninsula Watershed each year; hiking, biking, walking and running are popular activities along the six-mile Sawyer Camp Trail as well as golfing at the public Crystal Springs Golf Course. Additional public trails on the eastern side of the Watershed include Crystal Springs, San Andreas, Sheep Camp, Ralston and Edgewood. In addition, the Fifield-Cahill Ridge Trail traverses 10 miles of the Peninsula Watershed from Sweeney Ridge to Highway 92. Access on the Fifield-Cahill Ridge Trail is by reservation for scheduled walks or rides guided by trained trail leaders.

Scenic Easement and Recreation Easement

In 1969 the City of San Francisco granted two easements to the Department of the Interior that, in combination, cover approximately 23,000 acres of the Peninsula Watershed. One is a Scenic Easement, and the other is a Scenic and Recreation Easement. The easements were established with approval of the State of California and San Mateo County in order to provide for the increased federal share of costs for the construction of I-280 that was required to change the planned route of I-280 to a less environmentally damaging location further east of Crystal Springs Reservoir. The approximately 19,000-acre Scenic Easement applies to the lands west of Crystal Springs and San Andreas Reservoirs. The approximately 4,000-acre Scenic and Recreation Easement applies to lands in the vicinity of I-280. Both easements place restrictive covenants on land-uses not related to the SFPUC's overall management of the land for utility purposes. The two easements contain largely identical terms. One difference is that the Scenic Easement, which is the easement covering the lands west of Crystal Springs and San Andreas Reservoirs, expressly provides that it shall not be construed to permit public access.

In 1980 Congress transferred responsibility for administration of the easements from the Department of Interior to the National Park Service (GGNRA). The legislation provides that the easements are to be administered according to the terms of the National Park Service. The Peninsula Watershed is not part of a national park or recreation area per se, as the SFPUC retains fee ownership of the land and the National Park Services has only a limited interest, in that it can object to land-uses not related to utility management or to the other land-uses that are not specifically permitted by the terms of the easements. The City is not bound by National Park Service planning mandates or procedures that GGNRA must follow, including planning mandates of the GGNRA General Management Plans.

Peninsula Watershed Management Plan

On June 26, 2001, the SFPUC adopted the Peninsula Watershed Management Plan to provide a framework for making future decisions about watershed land and water resources while protecting the water quality of the City's watersheds and reservoirs. The primary goal of the Peninsula Watershed Management Plan is to maintain and improve source water quality to protect public health and safety. Secondary goals include the preservation and enhancement of watershed ecological and cultural resources, the protection of the watershed (and adjacent urban areas and the public) from fire and other hazards, and the use of the Watershed for both ongoing and potentially new compatible uses including educational, recreational, and scientific uses.

The Scenic Easement by its terms does not provide for public access to the lands west of Crystal Springs Reservoir. San Francisco as the fee owner, however, has retained the right to allow such access as it did in 2002 with the approval of the Fifield-Cahill Ridge Trail. After studying several trail alternatives, the SFPUC amended the Peninsula Watershed Management Plan by selecting a Fifield-Cahill Ridge Trail alternative with

low environmental impacts due primarily to its limited access and capacity (via a reservation system) and supervised use (by trained trail leaders). Such a properly mitigated trail is consistent with the terms of the easement and compatible with the goals and objectives of the Peninsula Watershed Management Plan. In their resolution (No. 02-0265 dated December 18, 2002), the SFPUC stated it was their intention to *...enact the highest level of environmental protection feasible and necessary to protect the resources of the Peninsula Watershed from the impacts of public access to the interior of the Watershed (particularly trespass and the construction of unauthorized trails)....*

Stewardship Policy

On June 27, 2006, the SFPUC adopted an Environmental Stewardship Policy for the long-term management direction of lands and natural resources affected by operation of the water system by its Water Enterprise (a utility organizational unit of the SFPUC). This policy represents a commitment by the SFPUC and its employees for responsible natural resource management that protects and restores viable populations of native species and maintains the integrity of the ecosystems that support them for current and future generations.

To the maximum extent practicable, the SFPUC's stewardship policy ensures that all operations of the water system (including water diversion, storage and transport), construction and maintenance of infrastructure, land management policies and practices, purchase and sale of watershed lands, and lease agreements for watershed lands protect and restore native species and the ecosystems that support them.

General Comments

The SFPUC has the following concerns that we request be addressed in the EIS regarding the potential effects of the proposed update to the GGNRA General Management Plan on the SFPUC's Wastewater Treatment System, Lake Merced, and the Peninsula Watershed.

Boundary Adjustments: McNee Ranch in San Mateo County

In the discussion of inclusion of McNee Ranch State Park within the GGNRA's park boundary, the GMP / EIS states that the network of trails and roads within this park unit "... are important to the planned east-west connection that will enable hikers to cross from San Francisco Bay to the Pacific Ocean." More information is needed on this proposed (and apparently "planned") east-west connection trail. Additional trails through SFPUC watershed lands are limited to those set forth in the Peninsula Watershed Management Plan (see comments below for Alternatives 1 through 3 and No-Action Alternative: *Park Lands in San Mateo County, SFPUC Peninsula Watershed -- Sweeney Ridge (Including Cattle Hill and Picardo Ranch)*. In addition, the existing main road through McNee Ranch State Park is significantly degraded and needs extensive repair and rebuilding. As required by NEPA, this economic impact should be included in the EIS.

Alternatives 1 through 3: Ocean Beach

Alternatives 1, 2 and 3 for Ocean Beach include statements supporting the relocation of facilities out of vulnerable locations and restoring natural processes in order to address coastal erosion. Other statements describe a need to redesign the Ocean Beach Corridor for sea level rise and allowing natural shoreline processes to continue unimpeded.

The EIS has presented an insufficient range of alternatives for analysis. Alternatives 1, 2, and 3 differ only slightly from each other and contain virtually the same language with regard to the proposed approach for existing infrastructure (e.g., the approach of relocating facilities out of vulnerable locations). This lack of a meaningful alternative to provide for the continued operation, maintenance and upgrade of existing infrastructure fails to meet the minimum requirements of NEPA.

As stated above (see "Background), the SFPUC owns and operates the Oceanside Water Pollution Control Plant located adjacent to The Great Highway. Other related infrastructure includes the Westside Transport Box that extends approximately 1.5 miles under The Great Highway and the Lake Merced Transport Tunnel extending approximately from Sloat Boulevard and The Great Highway to John Muir Drive. In addition, the Southwest Ocean Outfall is located south of Sloat Boulevard and permitted discharge points are located from Lincoln to Vicente in the Sunset District. These facilities and structures are critical to the treatment and transport of wastewater and stormwater and the control of pollutants entering the coastal waters of the Pacific Ocean. In addition, a restroom facility at Sloat Boulevard and The Great Highway was constructed as mitigation for the wastewater facility construction in the area. San Francisco ratepayers have invested hundreds of millions of dollars to construct these facilities to safely and efficiently deal with sewage and stormwater runoff in an environmentally responsible manner in compliance with state and federal regulations.

The SFPUC will continue to operate and maintain its critical infrastructure. Maintenance includes, for example, the prevention of damage to outfall structures by utilizing appropriate measures to protect the facilities from beach erosion. The stability of the Oceanside Water Pollution Control Plant, the Westside Transport Box and the Lake Merced Tunnel depend on the continued implementation of beach erosion control measures and the maintenance of structures that protect The Great Highway.

SFPUC objects to the EIS for failing to examine an alternative that accommodates the continued operation, maintenance, and upgrading of existing infrastructure, instead of only anticipating "relocation" of facilities. SFPUC strongly urges NPS to either amend the existing alternatives to specifically provide for the option of continued operation, maintenance, and upgrade of existing infrastructure, or to create a new alternative which provides this option.

In addition, the EIS fails to discuss or analyze the impact of an inter-agency visioning process underway with the City, GGNRA, San Francisco Planning and Urban Research

Association (SPUR) and other interested parties, regarding future actions on Ocean Beach. Determination of a Preferred Alternative in advance of consideration of the outcomes of this planning process, in which GGNRA participates, is not appropriate.

Relocation of major infrastructure (e.g., force mains and facilities) is not a feasible option in this case. The Alternatives need to consider protection and preservation options for such circumstances.

Mile Rock Tunnel: Proposed Designation of Eligibility for the National Register of Historic Places

Mile Rock Tunnel is an active part of San Francisco's wastewater infrastructure. As such, structural alterations have been performed over the years (e.g., Mile Rock Tunnel has been connected to the Richmond Tunnel) which have likely compromised the historic integrity of the structure. The SFPUC objects to the designation of this tunnel as eligible for listing in the National Register of Historic Places (as described on page II:104 of the GMP / EIS) and respectfully requests that an assessment is done by qualified experts before such a designation is made. SFPUC further notes that the tunnel is not visible or accessible to the public and therefore has little, if any, value as a historic place.

Lands End area: Alternatives 1 and 2

The EIS proposes two Alternatives for the Lands End area. Alternative 1 would make the Lands End area into an "Evolved Cultural Landscape Zone and Alternative 2 would make the Lands End area into a Natural Area.

SFPUC has existing infrastructure in the Lands End area, including Mile Rock Tunnel, Mile Rock outfall, and an air relief vent in the northeast corner of the Lands End parking lot (which includes wireless report level equipment). We require frequent access to these structures and equipment to maintain and ensure their proper operation, including occasional night-time access.

SFPUC respectfully requests that the Alternatives be modified to ensure that this necessary and on-going use of the area is preserved.

Alternative 1: Fort Funston

This alternative calls for the addition of a new visitor center and expansion of park operations in the southwest corner (including a stewardship center, nursery and housing for staff and volunteers).

Since the purpose of Alternative 1 is to improve visitor access and enhance the visitor experience, it is reasonable to expect a significant increase in the number of visitors to Fort Funston. As noted above (see "Background"), the SFPUC shares management responsibility for Lake Merced with the San Francisco Recreation and Park Department. The SFPUC is concerned that traffic impacts from increased visitor use of Fort Funston

could affect visitors to Lake Merced (located to the east of Fort Funston directly across Highway 35 - Skyline Boulevard).

Alternatives 1 through 3 and No-Action Alternative: Fort Funston

The SFPUC owns and operates two assets at Fort Funston related to wastewater treatment: 1) An outfall pipe and discharge structure at Lake Merced; and 2) An outfall pipe used by Daly City for stormwater and wastewater conveyance. The SFPUC will continue to operate and maintain these structures, including maintenance activities to prevent damage from beach erosion. The GMP / EIS should be amended to include a description of these wastewater facilities and to include their maintenance and operation as part of the proposed alternatives.

Alternatives 1 through 3 and No-Action Alternative: Park Lands in San Mateo County

SFPUC Peninsula Watershed -- Sweeney Ridge (Including Cattle Hill and Picardo Ranch)

Alternatives 1 through 3 for Sweeney Ridge (Natural Zone) call for trail connections "...to the regional trail network and the surrounding public lands (San Francisco Public Utilities Commission lands, San Pedro Valley County Park, McNee Ranch, and Rancho Corral de Tierra)...." We are generally in support of this concept, provided that trail proposals are consistent with the Peninsula Watershed Management Plan. As described above (see "Background") the Peninsula Watershed Management Plan provides a planning policy framework for the SFPUC for making future decisions about watershed land uses. With the Fifield Cahill Ridge Trail now complete, the highest trail priorities as set forth in the Peninsula Watershed Management Plan are: 1) to complete a connector trail from Sneath Lane to the North San Andreas Trail; 2) to build the southern extension of the Ridge Trail from Highway 92 south to the Kings Mountain Trail; and 3) to improve trails and connectors so that there is a continuous north-south public trail along the eastern edge of the Watershed. In addition, although the Peninsula Watershed Management Plan includes policies to consider the addition of new trails and connectors in zones of low vulnerability and risk and to limit public trails to the periphery of the Watershed in order to minimize adverse impacts (fire, the spread of exotic weed species, direct impacts to sensitive species, etc.), the Plan also includes policies that prohibit the construction of trails not addressed in the plan. In addition, the Plan includes polices that prohibit unsupervised access to existing trails and roads not addressed in the Plan.

Alternatives 1 through 3 for Sweeney Ridge (Natural Zone) also call for primitive camping sites. Please see *SFPUC Peninsula Watershed – Potential Fire Impacts from Proposed Uses for Rancho Corral de Tierra and the Gregerson Properties* below for a discussion of concerns related to primitive camping.

Alternative 1 for Sweeney Ridge (Scenic Corridor Zone) includes a proposal for limited vehicular access to the Bay Discovery Site. More information is needed as to the

possible access routes and the purpose of the access. This is particularly important if the proposed access route is over Army Road, most of which is owned in fee by the SFPUC. The SFPUC generally does not permit private vehicles unrelated to utility purposes on Watershed roads. Since Army Road is used as a public trail, there is also a safety concern for trail users sharing this relatively narrow access road with private vehicles. Private vehicles without spark arrestors and other fire suppression equipment could potentially create a fire hazard, particularly if the vehicle pulls onto the unpaved shoulder and the catalytic converter comes into contact with vegetation, igniting a fire. In addition, the portion of the access road on GGNRA property is unpaved and in very poor condition, creating a hazard for vehicles.

Alternative 1 for Sweeney Ridge (Scenic Corridor Zone) also includes a proposal for hikers' huts, but includes no description of what this facility is (or a range of options or existing examples). Our concern would be the potential for fire and other impacts to Watershed resources. (Please see *SFPUC Peninsula Watershed – Potential Fire Impacts from Proposed Uses for Rancho Corral de Tierra and the Gregerson Properties* below for a discussion of concerns related to primitive camping.) While not understanding exactly what is meant by a "hikers' hut", presumably it could be a potential ignition source especially if open fires or stoves for heating or cooking are allowed.)

SFPUC Peninsula Watershed – GGNRA Scenic Easement and Recreation and Scenic Easement

Throughout the GMP / EIS (including the description of the "Planning Area" on page I:9) the SFPUC's Peninsula Watershed is repeatedly described as park lands that would receive park management guidance under the new general management plan. This description conflates the GGNRA's limited responsibility to administer the Scenic Easement and Recreation and Scenic Easements (see "Background" above) with its management responsibilities for its own park properties (owned in fee or leased). This description does not serve the public well because it is confusing and thus needs clarification.

It should also be noted that the figures in the GMP / EIS depicting the boundaries of these easements are inaccurate. The Recreation and Scenic Easement does not include the area of the SFPUC's Peninsula Watershed known as Polhemus and the San Mateo Creek area below Crystal Springs Dam (see attached map).

SFPUC Peninsula Watershed – Potential Fire Impacts from Proposed Uses for Rancho Corral de Tierra and the Gregerson Properties

As described above (see "Background"), the Peninsula Watershed is located within a CAL FIRE State Responsibility Area. There has not been a major fire on the Watershed since 1946. As a result, there is a large accumulation of fuel material creating a high fire hazard area (as designated by CAL FIRE). Small fires that have occurred since 1946 have generally been characterized as suspicious and frequently related to illegal camping. In addition numerous ignitions have occurred off Sawyer Camp Trail and

Army Road, and recently off I-280. Lightning is relatively rare on the Peninsula Watershed, leaving human actions as the most prominent source of fire ignition. For more information, please see the Peninsula Watershed Management Plan Final EIR (January 11, 2001) available on our website sfwater.org.

As set forth in the Peninsula Watershed Management Plan, the SFPUC has undertaken many improvements and management actions to reduce fire hazard on the Peninsula Watershed, thus protecting source water, water supply, utility infrastructure, habitat and species, and other watershed resources, as well as the visiting public, SFPUC employees, and surrounding properties and residents. These fire defense improvements include fuelbreaks, fire access roads with sufficient turnouts for emergency equipment, emergency water sources, gates and fencing, and helispots. In addition, the SFPUC has implemented management actions to reduce fire hazard such as requiring that all vehicles and equipment on the Watershed must comply with CAL FIRE fire prevention regulations (e.g., installation of spark arrestors, carrying fire suppression equipment). Most important, restricted access and security measures reduce fire ignition sources in the most vulnerable areas of the Watershed.

Even with the tremendous progress that has been made to reduce fire hazard on the Watershed, there is still much work to be done. In particular, the Pilarcitos Watershed and the western flanks of the Watershed from Montara Mountain to Sweeney Ridge are densely vegetated, have limited access for fire-fighting equipment and personnel, and have few developed water sources for fire suppression.

Alternatives 1, 2 and 3 for Rancho Corral de Tierra (and the boundary adjustment proposed for the Gregerson property to be included in the larger Rancho Corral de Tierra unit) include measures to increase public access, including primitive camping and multi-use trails within these park lands and connecting to a proposed new trail onto the Peninsula Watershed via Whiting Ridge. The GMP / EIS lacks even general information about the size, type, location or restrictions on primitive camping. More important, there is no analysis of existing fire conditions and the potential fire impacts to these lands or surrounding properties from the introduction of new sources of fire ignition. The GMP / EIS also proposes to close certain roads on park lands but does not contain an analysis of how this might impact access for fire fighting equipment and personnel. The text of the GMP / EIS notes that there are "...significant constraints on the availability of water...." at Rancho Corral de Tierra, but does not include mitigation measures to address the lack of developed water sources for fire suppression.

At a recent Roundtable Agency Meeting, the staff of the GGNRA suggested that the GGNRA's Fire Management Plan could be updated at a later date to address this issue. We feel this is insufficient given the gravity of the potential adverse effects to Watershed resources and human life and the requirements of NEPA. A large wildfire could cause large-scale impacts to the numerous special status plants and wildlife that occur on SFPUC lands. In addition, water quality and supply would be altered by a large wildfire. Ash fallout during a fire can directly damage water quality. The sedimentation caused by loss of vegetation that has been burned off of watershed slopes, however, is a more significant cause of water quality degradation.

For example, the Denver Water Department experienced two catastrophic fires on watershed lands southwest of Denver Colorado in 1996 with the Buffalo Creek Fire near Strontia Reservoir and the 2002 Hayman Fire near Cheesman Reservoir. The Buffalo Creek Fire, which was caused accidentally by Boy Scouts, burned 11,900 acres within the hydrologic boundary of the Strontia Reservoir. The Hayman Fire, which was caused by arson, burned 137,000 acres in the greater watershed including 7,500 acres of Denver Water property. These fires and subsequent rains created sedimentation and erosion problems that continue to plague the Denver Water Department. The water utility spent approximately $11 million on the implementation of a reclamation plan to remove debris, replace culverts, build sediment dams, and re-seed slopes. Currently, a $30 million project is underway to remove an estimated 1 million cubic yards of fire-related debris (from both fires) from Strontia Springs Reservoir downstream of the Cheesman Reservoir.

SFPUC Peninsula Watershed – Potential Impacts to Habitat and Species from Proposed Uses for Rancho Corral de Tierra and the Gregerson Properties and Proposed Trails on SFPUC Watershed Lands

As described above, the SFPUC's Peninsula Watershed contains a unique assemblage of habitat that supports the highest concentration of special status species in the Bay Area. It is a State Fish and Game Refuge and includes critical habitat designated by the USFWS for the marbled murrelet and California red-legged frog (special status species). There is much information on the existing conditions of the Watershed, including biological assessments and monitoring reports of special status species and habitat, as well as publicly available programmatic final EIRs for the Peninsula Watershed Management Plan and the Water System Improvement Program. In addition, the GGNRA produced the *Plant Community Classification and Mapping Project Final Report* in 2003 which includes GGNRA lands and surrounding wild lands on the San Francisco Peninsula. And yet in the discussion of proposed new trails adjacent to, or connected with, or through the Watershed (including Sweeney Ridge, the proposed Whiting Ridge Trail and Skyline to Canada connector trail), existing conditions and potential impacts are not analyzed.

In March 2000, the United States Fish and Wildlife Service (USFWS) reviewed the draft Peninsula Watershed Management Plan EIR and provided comments on the alternatives for the proposed Fifield Cahill Ridge Trail. USFWS agreed with the characterization of the proposed trail route as running through "...one of the largest and most pristine expanses of natural habitats in the northern San Francisco Peninsula" and emphasized the scarcity of these habitats and the increasingly important role they play in the survival of federally listed species. A letter from the California Department of Fish and Game (CDFG) in February 2000 expressed a similar view and both agencies described unrestricted public access along the proposed Fifield Cahill Ridge Trail as having serious impacts to listed species that may not be possible to mitigate and recommended an alternative that allowed only restricted access using a docent led program with strict limits on the number and frequency of trail users. The SFPUC subsequently selected the most environmentally protective alternative consistent with

recommendations of these state and federal agencies. For the same reasons cited above in the discussion of proposed trails for Sweeney Ridge (including Cattle Hill and Picardo Ranch), the proposed Whiting Ridge and Canada Road to Skyline (north of the Phleger Estate) trail alignments are not a high priority for the SFPUC based on the policies set forth in the Peninsula Watershed Management Plan. If these proposals were to be considered at a later date, they would be subject to environmental review under the California Environmental Quality Act (CEQA). Like the Fifield Cahill Ridge Trail, these trail proposals would also include environmental mitigation measures necessary to protect watershed resources from public access (including impacts to special status species and sensitive habitat such as the San Bruno elfin butterfly habitat on the proposed Whiting Ridge trail alignment). More than likely, a restricted public access program similar to the one for the Fifield Cahill Ridge Trail would be required to avoid or minimize significant adverse environmental impacts or the SFPUC may reject these trail proposals altogether because of insurmountable environmental impacts, conflicts with adopted policies (including the Stewardship Policy), the additional financial burden to water ratepayers, or other reasons.

The GMP/EIS should describe and evaluate the potential impacts of increased public access to areas adjacent to SFPUC lands. Proposed trails and public access can introduce or exacerbate the dispersal of invasive exotic plant species into sensitive habitat areas of the Watershed. Another concern is that without effective mitigation, additional public access to Rancho Corral de Tierra will facilitate trespass resulting in degraded habitat. In spite of continuous patrols and other security measures, trespass continues to be a serious problem on the SFPUC's Peninsula Watershed, including motorcycle trespass, which has degraded sensitive butterfly habitat on Fifield Ridge. Evidence suggests that this illegal trespass is coming from Montara Mountain.

It is not clear why potential impacts to the marbled murrelet are not described in the Special Status Species section of the description of potential environmental consequences (Volume II, pages 245-261), especially since the statement in Volume II (page 62) "to evaluate the effects on special status species, a set of species considered likely or possible to experience impacts from GMP actions was selected for assessment based on the presence of suitable habitat within the project area and discussions with NPS biologists" is followed by a section devoted to a general description of the habitat requirements of the marbled murrelet in San Mateo County (Volume II, page 66). This is a good example of how the GMP / EIS misses an opportunity to evaluate the environmental effects of fire hazard from ignition sources from existing and proposed public access to large swaths of land near the designated marbled murrelet critical habitat. Given the regional topography and climate, it is not difficult to understand that a large fire could sweep up the slopes of Rancho Corral de Tierra onto the SFPUC's Peninsula Watershed and spread to the designated marbled murrelet critical habitat.

Similarly there is no evaluation of the potential impact to marbled murrelets due to an increase of corvids attracted to the area by trash from the proposed public picnic areas or food refuse left by trail users on authorized trails as well as trespassers taking advantage of new access. There have been no observations of crows, ravens or other corvids in the upper Pilarcitos drainage and monitoring of marbled murrelets shows a

stable or increasing nesting population in this area. Beyond the borders of the SFPUC Peninsula Watershed, however, studies have shown sharp declines of nesting murrelets in their southern range in the Santa Cruz Mountains, due in part to the increase in corvids from campgrounds and other human activities, which underscores the need to protect the murrelet habitat on the Peninsula Watershed from damaging human behavior, i.e. littering (Citations are included in the attached Table of Specific Comments).

Adequacy of the GMP / EIS

We agree that a programmatic EIS is the appropriate level of review under NEPA for the proposed update to the GGNRA's General Management Plan because it is a regional land use plan that crosses multiple jurisdictions, covers numerous ecosystems, and many of the specific details of the federal action are unknown. An important purpose of the EIS is to focus the scope of alternatives and analyze the potential environmental impacts and mitigation (with an emphasis on cumulative effects of multiple future activities) to better inform the subsequent project-level environmental review. We look forward to collaborating with the GGNRA on future project-level environmental review as specific park projects are developed.

The GGNRA will be relying on the programmatic GMP / EIS to analyze the alternatives in a broad-based fashion. Since specific details are not known at this time, the environmental effects analysis and mitigation should also be broad, general and include only that which is reasonably foreseeable. But where existing conditions are known (or knowable), then NEPA requires an analysis of potential environmental impacts and appropriate mitigation measures.

In its current form, the GMP / EIS seems to include a very ambitious program for GGNRA park expansion, including new park land and new activities, particularly under the preferred alternative. Relatively scant attention, however, is paid to an analysis of existing conditions to determine potential environmental effects. Entire areas of impact analysis have been overlooked, such as hazardous fire conditions on Rancho Corral de Tierra and the Gregerson Property, existing conditions on the SFPUC's Peninsula Watershed including special status species and their habitat, and the apparent conflict between certain aspects of the proposed federal action and local agency plans and policies. As a result, potential impacts have not been addressed and mitigated. The current approach frustrates the effort to provide cumulative effects analysis as required under NEPA.

We believe that the GMP / EIS is deficient in its descriptions of the various alternatives as required by 40 CFR Part 1502.14 (affected Environment). In addition the GMP / EIS does not adequately describe the environmental consequences and their significance, both direct and indirect, as required by 40 CFR Part 1502.16. Finally, the GMP / EIS does not adequately address possible conflicts between the proposed action and the objectives of local land use plans, policies and controls for the area concerned as required by 40 CFR Part 1508.8.

We strongly recommend that the draft GMP / EIS be revised by incorporating the following:

Boundary Adjustments: McNee Ranch in San Mateo County

- Provide a complete description of the proposed east-west trail alignment and its connection to McNee Ranch State Park. Develop east-west trail alignment alternatives that do not cross through the SFPUC Peninsula Watershed, particularly sensitive habitat areas.
- Provide an analysis of existing conditions and potential impacts from increased public use of trails.
- Provide an economic analysis of the potential cost to federal tax payers for reconstruction of the main road and other trail improvements in McNee Ranch State Park.

Ocean Beach, Alternatives 1 through 3:

- Provide a more complete description of the existing conditions including the location of areas vulnerable to "natural processes" and what is specifically is meant by "natural processes."
- Provide a complete description of the proposal appropriate for a programmatic EIS. As described in the GMP / EIS, the scope of the relocation proposal is unclear.
- The proposed redesign of the Ocean Beach Corridor contemplated in the GMP / EIS should be supported by a conceptual plan, and at a minimum, a complete description.
- The alternatives should address the existing policies and plans of the SFPUC for the operation of its Oceanside Pollution Control Plan and related infrastructure.
- The EIS should provide an alternative for continued operation, maintenance, and upgrade of existing infrastructure.
- The EIS should analyze the inter-agency planning process currently underway which includes participation of both the SFPUC and GGNRA and its potential impact on the alternatives

Mile Rock Tunnel: Proposed Designation of Eligibility for the National Register of Historic Places

- Do not propose historical designation for Mile Rock Tunnel, since the designation is likely inappropriate for a facility that has been substantially altered over the years and is not visible or accessible to the public.
- Before further contemplation of such a designation, have qualified experts perform an assessment of eligibility.

Lands End Area: Alternatives 1 and 2

- Modify the alternatives to ensure that SFPUC has access to maintain and ensure proper operation of its structures and equipment in the area, including night-time work.

Fort Funston, Alternative 1:

- The design of the Fort Funston Visitor Center (and other facilities that generate public use) should include a parking plan developed in coordination with the San Francisco County Transportation Authority to provide sufficient parking spaces to avoid unacceptable vehicle/pedestrian hazards. The parking demand would be estimated during project-level environmental review of the proposed facilities.
- To the extent feasible, include the use of congestion management tools at Fort Funston such as improving and promoting transit options, and if warranted by parking demand, implementing a reservation system, shifting employee work hours, and employing congestion fees (such as parking fees).
- Collaborate and coordinate on transportation planning opportunities regarding GGNRA's proposed plans for Fort Funston with the City's proposed plans for Lake Merced, Harding Park and the San Francisco Zoo.
- Monitor the surrounding area streets and take appropriate enforcement action.

Fort Funston, Alternatives 1 through 3 and No-Action Alternative

- The GMP / EIS should include a description of the SFPUC's two wastewater assets at Fort Funston (the first being an outfall pipe and discharge structure at Lake Merced and the second being an outfall pipe used by Daly City to convey stormwater and wastewater) and include their maintenance, operation and possible upgrade as part of the proposed alternatives.

Park Lands in San Mateo County, Alternatives 1 through 3 and No-Action Alternative:

SFPUC Peninsula Watershed -- Sweeney Ridge (Including Cattle Hill and Picardo Ranch)

- Provide a more complete project description appropriate for a programmatic EIS for limited vehicle access to the Bay Discovery Site. Describe the purpose of vehicle access and the proposed route or possible alternative routes.
- If the proposed route for limited vehicle access is on the SFPUC's property (via Army Road), private vehicles not related to utility purpose will not be allowed due to safety concerns (traffic and fire). Provide a GGNRA van or other suitable vehicle properly outfitted with fire suppression equipment and

driven by GGNRA personnel. A properly trained and equipped concessionaire could also provide this service. Assuming that the purpose of access is for persons with disabilities, the vehicle should meet accessibility standards. Coordinate with the SFPUC regarding the frequency of vehicle travel on Army Road.

- Consider an alternative route for persons with disabilities to access the Bay Discovery Site without the use of a vehicle. For example, the existing trail from Skyline College via Sweeney Ridge connecting to the upper Mori Point Trail to the Bay Discovery Site could possibly be improved to meet ADA guidelines, or at least improved sufficiently to allow more disabled access. Conduct a biological assessment, particularly for Mission Blue butterfly and its habitat near the area with a series of steps south of Skyline College (see attached Sweeney Ridge Trail map) and provide appropriate avoidance and/or mitigation measures.
- Include mitigation measures outlined below (see "Rancho Corral de Tierra and the Gregerson Properties") to address potential impacts from fire hazard from new ignition sources (hikers' huts, primitive camping).

SFPUC Peninsula Watershed -- GGNRA Scenic Easement and Recreation and Scenic Easement:

- Cite the authorizing statute for the easements.
- The relationship between the GGNRA and the SFPUC should be well defined, beginning with the following clarification: The SFPUC's Peninsula Watershed is not park land as such because the Scenic Easement and Recreation and Scenic Easement do not convey GGNRA management authority over the SFPUC's Peninsula Watershed. The SFPUC is not bound by National Park Service planning mandates or procedures that GGNRA must follow, including planning mandates of the proposed updated GGNRA General Management Plan.
- Maps depicting the easement boundaries should be corrected to show that the Recreation and Scenic Easement does not include Polhemus and the area around San Mateo Creek below Crystal Springs Dam (see attached map).

Rancho Corral de Tierra and the Gregerson Properties and Proposed Trail Alignments Connecting To, or Crossing Over SFPUC Watershed Lands:

- The existing fire hazard conditions for Rancho Corral de Tierra and the Gregerson property should be analyzed in greater detail. This analysis should include fire history, CAL FIRE status (in terms of State Responsibility Area), location of nearest CAL FIRE station or other fire fighting response unit, potential ignition sources, fire spread and growth potential (fire severity), fuel type distribution, resources at risk, likely fire behavior (based on characteristics such as slope, surface fire fuel loading and arrangement, presence of stands of tall trees that could act as "fuel ladders"), and the

existing fire protection system (including developed emergency water sources and access).

- The potential fire impacts from proposed uses should be analyzed and mitigated to the extent possible. The economic impact analysis required under NEPA should include the costs of fire hazard reduction. While the specific details of the proposed primitive camping may not be known, a range of options could be discussed. Reasonable mitigation measures should include locating primitive camp sites to areas of low fire hazard, providing emergency water and adequate access for fire fighting, on-site supervision (park service ranger or concessionaire) and emergency communication since cell phone reception in this area is poor.
- The GMP / EIS should include mitigation measures to address the proposed new uses that create potential ignition sources, such as public trails and picnic areas. Mitigation measures should include fuel breaks to separate potential ignition sources from high fire hazard areas, fuel load reduction, developing emergency water sources, restricting public access to high fire hazard areas with fences, gates and a permit or reservation system, and installing helispots. Park service personnel who are designated as "First Responders" in an emergency should be trained in fire response and fire prevention. All vehicles entering high fire hazard areas should be properly outfitted for high fire hazard areas per CAL FIRE regulations (spark arrestors, fire suppression equipment including emergency water).
- Evaluate existing roads for fire access and improve as necessary and/or provide new access roads (or fuel breaks that could serve as a fire road) to high fire hazard areas when feasible to accommodate emergency fire fighting equipment and personnel. When considering road closures for habitat improvement or other purposes, evaluate the need for emergency access for fire fighting equipment and personnel.
- Develop an evacuation and safety plan for public use areas near high fire hazard areas.
- Evaluate potential impacts to marbled murrelets and their habitat including: a) the potential increased risk of fire from new ignition sources(primitive camping sites and hikers' huts); b) the increased risk of marbled murrelet displacement due to an increase of corvids caused by trash build-up from picnickers, hikers, bicyclists, horseback riders that use the trails in Sweeney Ridge and Rancho Corral de Tierra—as well as those who might trespass onto SFPUC lands; and c) analyze the increase in the potential for marbled murrelet disturbance during construction activities (roads, trails, huts, fencing, etc). Provide appropriate mitigation measures.
- Evaluate the potential for the introduction and spread of invasive exotic plant species into sensitive habitat areas of the Watershed and provide appropriate mitigation measures.
- Conduct biological surveys for special status species on Rancho Corral de Tierra, the Gregerson Property, Picardo Ranch, McNee Ranch and San Pedro Valley County Park prior to increased public access development.

- Given the presence of sensitive natural resources on the SFPUC Watershed that could be impacted by new public uses and the high fire hazard in the area, consider a special zone of restricted public access for Rancho Corral de Tierra and the Gregerson Property so that there is a sufficient buffer area (possibly within one-half mile of the SFPUC property line). This buffer zone would have no public access or highly restricted public access and remain undeveloped except for improvements needed for resource protection.
- Provide specific cost analysis by park unit including adequate staffing levels in high fire hazard areas and new public use areas that may require staffing to minimize potential impacts to listed species, sensitive habitat and to minimize potential fire hazard from new ignition sources.

If you have any questions or need further information, please contact Joanne Wilson, Land and Resources Planner in the SFPUC's Natural Resources and Lands Management Division at (650) 652-3205.

Sincerely,

Michael Carlin
Deputy General Manager and Chief Operating Officer

Enclosures: Table of Specific Comments
Sweeney Ridge Trail Map
California Red-Legged Frog Critical Habitat Units SNM-1 and SNM-2 Map
Peninsula Watershed Map – Scenic Easement and Recreation and Scenic Easement

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Volume & Page No.	GGNRA Draft GMP / EIS Text (*Italics* are for emphasis by commenter)	Comment
I.vi	Executive summary: This general management plan addresses NPS-administered lands within the legislative boundaries of Golden Gate National Recreation Area and Muir Woods National Monument. The new general management plan will provide park management guidance for the following park sites: 1) *those park lands that are not covered by recent land use management plans and agreements*;... 3) lands and waters that are leased to the National Park Service or are under other management arrangements or easements, such as the San Francisco Public Utilities Commission Peninsula Watershed... Specifically these areas include the following:...park lands in San Mateo County, including the coastal area bluffs extending south from Fort Funston to Mussel Rock; Milagra Ridge; Shelldance Nursery Area; Sweeney Ridge, including Cattle Hill and Picardo Ranch; Mori Point; San Pedro Point; Devil's Slide coastal area; Rancho Corral de Tierra; Montara Lighthouse; Phleger Estate; *San Francisco Public Utilities Commission Watershed Easements*; and the offshore ocean environment.	Conveys impression that watershed lands are park lands and that there is not a management plan for the City's Peninsula watershed.
I.vii I.ix	**No-action Alternative** **Park Lands in San Mateo County** The park would also continue to consult with other agencies to achieve fundamental park goals regarding the San Francisco Public Utilities Commission Peninsula Watershed, where the park holds scenic and recreational easements. **Alternative 1: Connecting People with the Parks** **Alternative 1 is the National Park Service's preferred alternative for park lands in Marin, San Francisco, and San Mateo counties.** **Park Lands in San Mateo County (Preferred Alternative)**	Conveys impression that GGNRA will be managing the Peninsula Watershed. Later text discusses possible watershed visitor center, but there is no mention of the SFPUC in the last sentence above as a participant in shared facilities.

I.xv-xvi	Park lands and ocean environments in San Mateo County *would be managed* as part of a vast network of protected lands and waters, some recognized as part of the UNESCO Golden Gate Biosphere Reserve. Park managers would emphasize connectivity, preservation, and restoration of the area's vital ecosystems through collaborative partnerships with other land management agencies. Strategic adjustments to the park's boundary would enhance the long-term preservation of ecological values... *There could be additional facilities that welcome visitors to the park.* This alternative would promote visitor information and orientation centers in Pacifica and in coastside communities. These facilities could be shared with San Mateo County Department of Parks, California State Parks, Monterey Bay National Marine Sanctuary, local governments, and other organizations.	
I.xvi I.xix	**Alternative 2: Preserving and Enjoying Coastal Ecosystems** **Concept** The emphasis of this alternative is to preserve, enhance, and promote dynamic and interconnected coastal ecosystems in which marine resources are valued and prominently featured. Recreational and educational opportunities would allow visitors to learn about and enjoy the ocean and bay environments, and gain a better understanding of the region's international significance and history. *Facilities and other built infrastructure could be removed to reconnect fragmented habitats and to achieve other ecosystem goals....* **Park Lands in San Mateo County** As in the other alternatives, park lands and ocean environments in San Mateo County would be managed as part of a vast network of protected lands and waters. In this alternative, however, park managers would emphasize work to preserve and restore these interconnected coastal ecosystems through collaborative partnerships with other land management agencies in the region. Together these groups would work to sustain the area's native	While existing parks may require facility removal, the environmental analysis is heavily skewed towards the environmental (specifically hydrological and biological resource) benefits of such removals, and short shrift is given to the effects of proposed new facilities, which would be the case in the Peninsula Watershed.

	biodiversity, reconnect fragmented habitats and migration corridors, minimize the impact of invasive species, manage for changing fire regimes, and restore naturally functioning ecosystems. Proactive management would build into the environment greater resiliency to climate change.	
I.8	**Chapter 1** **REGIONAL COLLABORATION** In working to preserve our park's resources unimpaired for future generations, *we will establish and maintain cooperative relationships with managers of adjacent public lands and watersheds*; tribal, state, and local governments; community organizations; and private landowners. We will collaborate with others to ensure that watersheds, ecosystems, viewsheds, and trail and transportation systems that extend beyond park boundaries are considered holistically, in order to best preserve important park resources, provide equitable and sustainable access, and advance the goal of creating a seamless network of protected lands.	The SFPUC, as the fee owner of the Peninsula Watershed, is not specifically called out nor is the relationship between GGNRA and SFPUC defined very well.
I.9	**THE PLANNING AREA** This new general management plan addresses the lands *administered by* the National Park Service within the legislative boundaries of Golden Gate National Recreation Area and Muir Woods National Monument. Over the last 15 years, the park staff has completed numerous land use and site plans for areas in Golden Gate National Recreation Area. These plans and associated environmental impact documents are current and therefore these areas are not included in the planning area for this updated general management plan. *The new general management plan will provide park management guidance for the following park sites:* 1) those park lands that are not covered by recent land use management plans and agreements; 2) those lands that are newly acquired or in the process of acquisition; 3) *lands and waters that are leased to the National Park Service or are under*	Text repeatedly calls watershed lands "park" lands when the NPS only has a limited easement interest that conveys no management authority. As discussed below, it is not clear what projects are proposed for the watershed, and the environmental analysis in many cases includes no information on possible impacts of new facilities in a closed area even if the projects were clearly identified.

	other management arrangements or easements (such as the San Francisco Public Utilities Commission Peninsula Watershed). The total area of land and water addressed in this plan is approximately 50,000 acres. park lands in San Mateo County, including... San Francisco Public Utilities Commission Peninsula Watershed easements;	
I.25	**SPECIAL MANDATES AND ADMINISTRATIVE COMMITMENTS RELATED TO GOLDEN GATE NATIONAL RECREATION AREA** *Special mandates are park-specific requirements that expand on the park's legislated purpose.* These mandates generally require the National Park Service to perform some particular action as directed though congressional legislation. Administrative commitments are agreements that have been reached through formal, documented processes, and include agreements such as a conservation easement. The ongoing mandates and commitments for Golden Gate National Recreation Area are described in this section. **MANAGEMENT AND ADMINISTRATION**	While terming the watershed to be "park lands", and acknowledging that federal legislation controls managment activities, there is no mention of the legislation that transferred the easements to the administration of the Park Service. Congress has mandated that the scenic easements shall be administered in accordance with their terms. 16 USC §460bb(p) is set forth below. The NPS management plan should reflect the limitations that the federal government can only "manage" the land in terms of administering the easements, and in terms of trails can only seek construction of "a trail" "connecting with a suitable beach unit" under their jurisdiction, along with trails that may be allowed under the Scenic *and* Recreation Easement. (p) San Francisco water department property; scenic and recreational easement With reference to those lands known as the San Francisco water department property shown on map numbered NRA GG-80,000-A, the Secretary *shall administer such land in accordance with the provisions of the documents entitled "Grant of Scenic Easement", and "Grant of Scenic and Recreational Easement"*, both executed on January 15, 1969, between the city and county of San Francisco and the United States, including such amendments to the subject document as may be agreed to by the affected parties subsequent to December

		28, 1980. *The Secretary is authorized to seek appropriate agreements needed to establish a trail within this property and connecting with a suitable beach unit under the jurisdiction of the Secretary.*
I.26	**PENINSULA WATERSHED CONSERVATION EASEMENT** The San Francisco Public Utilities Commission's Peninsula watershed is home to three drinking water reservoirs. Located in San Mateo County, 13 miles south of San Francisco, the Peninsula watershed consists of 23,000 acres of forested hills, coastal scrub, and grasslands. On January 15, 1969, the United States of America was granted conservation easements on 23,000 acres of watershed lands owned by the City/County of San Francisco. Two separate easements, a scenic easement and a scenic and recreation easement, were granted by San Francisco and accepted by the Secretary of the Interior. In 1972, Golden Gate National Recreation Area was charged with the responsibility of ensuring that the conditions of the easements are upheld. The scenic easement generally includes the area within the watershed west of the Crystal Springs and San Andreas reservoirs. The primary purpose of this easement is to preserve the property in its natural state while permitting "the collection, storage, and transmission of water and protection of water quality for human consumption." The scenic and recreation easement generally includes the area within the watershed east of the Crystal Springs and San Andreas reservoirs. The primary purpose of this easement is to preserve the property in its natural state while permitting "the collection, storage, and transmission of water and protection of water quality for human consumption; outdoor recreation; and other [compatible] uses." Both easements contain numerous restrictions on use or modifications of the property. The scenic and recreation easement also grants the public "the right, subject to rules and regulations as may be imposed and published by [the Public Utilities Commission], to enter the premises for recreational	Text is generally accurate but should acknowledge SFPUC watershed management plan and compare to alternatives. There is no mention of the fact that the Scenic Easement expressly says that it shall not be construed to require public access to the western 19,000 acres of the watershed. Legislation giving GGNRA management authority (16 USC 460 bb(p)) should be cited here as the congressional directive- easements to be managed in accordance with their terms, and also that NPS authorized to seek beach trail corridor.

	purposes." Golden Gate National Recreation Area has the right and obligation to monitor use of the land for consistency with the terms of the two easements.	
I.35 I.39 I.42	**RELATIONSHIP OF THIS PLAN TO OTHER PLANS** Golden Gate National Recreation Area and Muir Woods National Monument are located in the midst of a variety of public and private open spaces. These lands and waters combine to form a large and comprehensive natural open space corridor. Within Golden Gate National Recreation Area, there are sites that are being managed with guidance from recently completed land use or site management plans. The complex physical and political landscape of the San Francisco Bay Area has produced an environment where a multitude of planning takes place regarding transportation, conservation, recreation, growth and development, and coastal and ocean resources. Most of these public and private land and marine areas are covered by approved plans prepared by a host of federal, state, regional, and local agencies. Management of these lands and waters could influence or be influenced by actions presented in this general management plan / environmental impact statement. The following narrative briefly describes the various planning efforts and projects at the federal, park, state, and county levels, and how they may be influenced by the general management plan. **CURRENT PLANS FOR OTHER PARK AREAS NOT MANAGED BY THE NATIONAL PARK SERVICE** **COUNTY AND LOCAL PLANS** Peninsula Watershed Management Plan – San Francisco Public Utilities Commission	Including the watershed management plan with plans like adjacent cities' general plans, bicycle plans etc. diminishes the importance of the plan and disregards the fact that the plan governs administration of the watershed by the SFPUC as the fee owner, much like the more detailed description of the Presidio Management Plan discussed on p. 39 as a "**CURRENT PLANS FOR OTHER PARK AREAS NOT MANAGED BY THE NATIONAL PARK SERVICE**".
I.43	**RELATED LAWS AND NATIONAL PARK SERVICE**	If this is the case, then the management of the scenic easements is

	POLICIES... *Many park management directives are specified in laws and policies guiding the National Park Service and are not subject to alternative approaches...* In other words, a general management plan is not needed to decide that it is appropriate to protect endangered species, control exotic species, protect historic and archeological sites, conserve artifacts, or provide for access for disabled persons. Laws and policies have already addressed those and many other issues.	also not subject to alternative approaches as the federal legislation requires that the easements be administered in accordance with their terms. The most that the NPS can do in its plan is to promote the trail connection to a beach unit under NPS jurisdiction as authorized by 16 USC §460bb(p), and to suggest other uses consistent with the easements, with public access allowed only in the Scenic and Recreation Easement area.
I.103 I.104 I.105	**PROPOSED BOUNDARY ADJUSTMENTS** **Gregerson Property, San Mateo County** The property also possesses scenic vistas to the southeastern coast, and has high potential for recreation, *including a trail along the ridge connecting to a future* *Bay Area Ridge Trail segment through the extensive SFPUC watershed lands.* 2) ***Operational Issues:*** The access road would be beneficial for park management purposes. It runs along a low ridge, connecting the park's access road with the upper reaches of Rancho Corral de Tierra and the adjacent SFPUC watershed lands. In addition to improving access for managers, the property would simplify and reduce the length of the park's perimeter. **McNee Ranch, San Mateo County** It connects to ecosystems and landscapes under NPS management, I.108 In addition, visitors enjoy sweeping vistas of the Pacific Coast and rugged coastal hills from a network of multiuse trails and unpaved roads. These routes connect Pacifica with the coastside communities of Montara and Moss Beach, and lead to the highest points on Montara Mountain. *These trails are important to the planned east-west connection that will enable hikers to cross from San Francisco Bay to the Pacific Ocean....*	Per the comment above (I.25), the NPS management plan should reflect the limitations that the federal government can only "manage" the land in terms of administering the easements, and in terms of trails can only seek construction of "a trail" connecting with a suitable beach unit" under their jurisdiction, along with trails that may be allowed under the Scenic and Recreation Easement. Rather than blaze a new trail through sensitive areas in the interior of the Peninsula Watershed, NPS should improve and provide better interpretation of existing connector trails from Sweeney Ridge to coastal areas in Pacifica. For example, Milagra Ridge to the Shelldance Nursery (with better access / interpretation for crossing Highway 1 to Mori Point) and the trail that descends from near the Bay Discovery Site to Fassler Avenue in Pacifica and continues via sidewalks to Rockaway Beach and Pacifica State Beach (Linda Mar). In the discussion of new Bay to Ocean trails through the Peninsula Watershed, existing conditions and potential impacts are not analyzed. In March 2000, the United States Fish and Wildlife Service (USFWS) reviewed the draft Peninsula Watershed Management Plan EIR and provided comments on the alternatives for the proposed Fifield Cahill Ridge Trail. USFWS agreed with the characterization of the proposed trail route as running through "...one of the largest and most pristine expanses of natural habitats in the northern San Francisco Peninsula" and emphasized the scarcity of these habitats and the

I.110	McNee Ranch is the only state park land adjacent to Golden Gate National Recreation Area that is not also within the federal authorized boundary. The park seeks to include the property within its authorized boundary to facilitate cooperative management, provide consistency, and enhance recognition of this property as part of the larger area of protected lands. This is not a proposal for acquisition. This proposal corrects a technical error that omitted McNee Ranch from the park when Montara State Beach was included in the park boundary in 1980. Montara State Beach was expanded to include McNee Ranch sometime afterwards. As is the case with the other California state parks in the boundary, administration (cooperative management) would not be an additional burden. **POTENTIAL FUTURE BOUNDARY ADJUSTMENTS** The National Park Service does not manage all the lands within the legislative boundaries of Golden Gate National Recreation Area; there are public lands within the boundaries that are managed by other agencies. Golden Gate National Recreation Area staff will continue to monitor these lands and coordinate with these land managers in a way that maintains and enhances the values that contributed to the lands being included in the boundary. Some of these efforts could lead to eventual acquisition by the National Park Service.	increasingly important role they play in the survival of federally listed species. A letter from the California Department of Fish and Game (CDFG) in February 2000 expressed a similar view. The Peninsula Watershed Management Plan provides a planning policy framework for the SFPUC for making future decisions about watershed land uses. With the completion of the Fifield Cahill Ridge Trail, the highest trail priorities as set forth in the Peninsula Watershed Management Plan are: 1) to complete a connector trail from Sneath Lane to the North San Andreas Trail; 2) to build the southern extension of the Ridge Trail from Highway 92 south to the Kings Mountain Trail; and 3) to improve trails and connectors so that there is a continuous north-south public trail along the eastern edge of the Watershed. While the Peninsula Watershed Management Plan includes policies to consider the addition of new trails and connectors in zones of less vulnerability and risk, the Plan also includes policies to limit public trails to the periphery of the Watershed to minimize adverse impacts (sensitive habitat and species, fire, spread of exotic weed species, etc.) and a prohibition on the construction of new trails and unsupervised access to existing roads and trails not addressed in the Plan.
I.112	***Undeveloped Land Adjacent to Sweeney Ridge and County of San Francisco Jail Property*** The property is adjacent to park land, sharing two sides with Sweeney Ridge. It contains county jails #3 and #7, along with a plant nursery and cultivated fields. A large portion of the 145-acre property, roughly 50 acres, is undeveloped and relatively undisturbed. This undeveloped area is contiguous with the extensive coastal ecosystems that the National Park Service manages on Sweeney Ridge. It has similar scenic qualities and habitat	The San Francisco Administrative Code outlines the procedure for disposal of surplus City property. Jail property declared surplus would first be offered to other City departments at fair market value. The SFPUC has expressed an interest in this jail property in the past because it is within the hydrologic boundary of the Peninsula Watershed.

	values, including potential habitat for threatened and endangered species. Inclusion of the undeveloped area in the park's boundary would enable the National Park Service to receive it, should the county government declare the property excess.	
I.110	***Gateway to San Mateo County*** Comprising a large area of land between Rancho Corral de Tierra and Highway 92, this area could contribute substantially to natural resource protection, *the regional trails network,* and preservation of scenic and rural character.	The figure that follows showing this priority conservation area does not provide any detail regarding potential boundary adjustments, which could adversely effect (surround) the SFPUC Peninsula Watershed. See above comments for pages I.103 - 110.
I.137 I.138-9 I.193	**TRAILS** **INTRODUCTION** Much of the trail system still requires upgrading to improve conditions, provide more sustainable alignments, and to fill gaps in the system. In new areas where the park is expanding, such as Rancho Corral de Tierra, a thorough evaluation and plan would be required following this general management plan to guide needed improvements. **San Mateo County Trails** In established areas of the park (Mori Point, Milagra Ridge, Sweeney Ridge) future efforts would focus on continuing to improve existing trails, including sustainable alignments and design, improved connectivity and accessibility, and provision of wayfinding signs. Safe trailheads, appropriate for both local and regional visitors, would be provided. Where appropriate, former management roads would be converted to trails. A more comprehensive approach to trail planning would be required for new areas coming into park management (Pedro Point, Rancho Corral de Tierra) and areas where trail deficiencies have not been addressed (Phleger Estate). **No action alternative:**	Not clear if first italicized portion of text includes watershed; text does not reference limitation in federal legislation regarding administration of easements in accordance with their terms or SFPUC watershed management plan, nor compare SFPUC plan with alternatives. What does it mean "to achieve fundamental park goals" when legislation mandates administration in accordance with the terms of the easements? See above comments for pages I.103 - 110.

	PARK LANDS IN SAN MATEO COUNTY **Overview** At the time the 1980 general management plan was developed, Golden Gate National Recreation Area did not manage any land in San Mateo County. Since that time, *NPS managed land within the designated park boundary* has grown to include almost 30,000 acres in San Mateo County. Stretching along the San Mateo coast to Rancho Corral de Tierra and inland to the Phleger Estate, the southern park lands feature a remarkable wealth of natural and historic resources. From rugged coastal bluffs and windswept ridgelines to a redwood forest, wetlands, and streams, these lands support an abundance of plants and wildlife and tell the story of the people who have shaped this peninsula over generations. Golden Gate National Recreation Area park lands in San Mateo County serve a large and diverse local population, offering many opportunities for recreation and enjoyment. Whether enjoying the trails, strolling the beaches, or taking in panoramic views up and down the Pacific coast, there are unlimited ways to explore and appreciate these park lands. Currently the National Park Service's presence in San Mateo County is limited, sites are not well identified, and there are few basic facilities to support access. *Management of park lands in San Mateo County is guided by the park's authorizing legislation and the management policies common to units of the national park system.* This management approach would continue under the no-action alternative, with the exception of Sweeney Ridge, for which a general management plan amendment was approved in 1985 to provide specific management guidance. Site planning for the enhancement of visitor facilities, such as the planning recently completed for Mori Point, would continue. *The park management would also continue to consult with other agencies to achieve fundamental park goals regarding the San Francisco Public Utilities Commission Peninsula Watershed, where the park holds scenic and recreational easements.*	

I.195-196	**San Francisco Public Utilities Commission Peninsula Watershed** **Easements** These 23,000 acres are managed by San Francisco Public Utilities Commission to protect San Francisco's water supply and the scenic, ecological, and cultural resources of the watershed. The management is guided by the commission's *Peninsula Watershed Management Plan*. Golden Gate National Recreation Area manages two easements over the Peninsula watershed: a scenic easement and a scenic and recreation easement that provide for preservation of natural values and limited recreational use. Compatible recreational, educational, and scientific uses are highly controlled. Primary public access is on trails along the eastern edge of the watershed where the trails are easily accessible from adjacent communities. Access on the 10-mile Cahill Ridge alignment of the Bay Area Ridge Trail is provided by guided tours. *The San Francisco Public Utilities Commission and National Park Service cooperate to ensure that ongoing water operations and other allowable uses are compatible with the preservation and access components of the easements.* The Peninsula watershed forms the core of the UNESCO Golden Gate Biosphere Reserve, an area rich in native plant and animal life.	Water operations and all utility functions are expressly excluded from NPS management or restrictions under the terms of the easements. There is no mention of the fact that the Scenic Easement does not require public recreational access.
I.213 (Alt. 1)	**Alternative 1:** **Ocean Beach** **In Both the Diverse Opportunities Zone and the Natural Zone** In this alternative, the National Park Service would participate in multiagency efforts to knit the unique assets and experiences of the Ocean Beach corridor into a seamless and welcoming public landscape, planning for environmental conservation, sustainable infrastructure, and long-term stewardship. The Park Service would continue to work with the City of San Francisco, California Coastal Commission, and the U.S. Army Corps of Engineers to address coastal erosion by *relocating facilities out of vulnerable locations and restoring*	"Managed retreat" would compromise the stability of the Oceanside WWTP. SFPUC has critical infrastructure in this area including the Westside Transport Box (1.5 miles long under the Great Highway). Ratepayers have spent hundreds of millions of dollars on the Oceanside Plant and associated structures, including a restroom located at Sloat & Great Highway that was paid for by ratepayers to mitigation construction of the Oceanside Plant. Mile Rock Tunnel is still operational and needed for combined system discharges.

	natural processes to maximize protection of the beach for its natural and recreational values. **Natural Zone** (south of the O'Shaughnessey seawall) The area would be managed to protect shorebirds and allow natural coastal and marine processes to occur while providing for a variety of compatible recreational activities that allow visitors to enjoy and view nature. This zone would extend to create approximately 5 miles of beach, dunes, and cliffs from central Ocean Beach south to Mussel Rock in San Mateo County. Park managers would protect shorebird habitat, *allow natural shoreline processes to continue unimpeded*, and provide visitors opportunities for self discovery while enjoying and viewing nature. **In Both Zones** This alternative supports the City of San Francisco's interest in a broad approach to redesigning the Ocean Beach corridor and exploring sustainable approaches to sea level rise. The park would continue to work with the City of San Francisco and the U.S. Army Corps of Engineers to address coastal erosion by relocating facilities out of vulnerable locations and restoring natural processes.	
I.240-1 (Alt. 2)	**Ocean Beach** **In Both the Diverse Opportunities Zone and the Natural Zone** In this alternative, the National Park Service would participate in multiagency efforts to knit the unique assets and experiences of the Ocean Beach corridor into a seamless and welcoming public landscape, planning for environmental conservation, sustainable infrastructure, and long-term stewardship. The park would continue to work with the City of San Francisco and the U.S. Army Corps of Engineers to address coastal erosion by relocating facilities out of vulnerable locations	

	and restoring natural processes. **Diverse Opportunities Zone** (along the O'Shaughnessey seawall) The northern end of Ocean Beach would be managed to provide opportunities for visitors to engage in a variety of beach-related recreational activities. As in alternative 1, the park would collaborate with the City of San Francisco to provide an enhanced oceanfront landscape in the Ocean Beach corridor with improved amenities to support enjoyment of the beach, including the coastal promenade, parking, and restrooms. **Natural Zone** (south of the O'Shaughnessey seawall) The area would be managed to protect shorebirds and allow natural coastal and marine processes to occur while providing for a variety of compatible recreational activities that allow visitors to enjoy and view nature. This zone would extend to create approximately 5 miles of beach, dunes, and cliffs from central Ocean Beach south to Mussel Rock in San Mateo County. Park managers would protect shorebird habitat, allow natural shoreline processes to continue unimpeded, and provide visitors opportunities for self discovery while enjoying and viewing nature. **In Both Zones** This alternative supports the City of San Francisco's interest in a broad approach to redesigning the Ocean Beach corridor and exploring sustainable approaches to sea level rise. The park would continue to work with the City of San Francisco and the U.S. Army Corps of Engineers to address coastal erosion by relocating facilities out of vulnerable locations and restoring natural processes.	
I.260 (Alt. 3)	**Ocean Beach** **In Both the Diverse Opportunities Zone and the Natural Zone** In this alternative, the National Park Service would participate in	

	multiagency efforts to knit the unique assets and experiences of the Ocean Beach corridor into a seamless and welcoming public landscape, planning for environmental conservation, sustainable infrastructure, and long-term stewardship. The park would continue to work with the City of San Francisco and the U.S. Army Corps of Engineers to address coastal erosion by relocating facilities out of vulnerable locations and restoring natural processes. **Diverse Opportunities Zone** (along the O'Shaughnessey seawall) Management of this zone would be the same as that described under alternative 2. **Natural Zone** (south of the O'Shaughnessey seawall) Management of this zone would be the same as that described under alternative 2.	
I.216	**PARK LANDS IN SAN MATEO COUNTY** **Overview** Under this alternative and others, park lands and ocean environments in San Mateo County *would be managed* as part of a vast network of protected lands and waters, some recognized as part of the UNESCO Golden Gate Biosphere Reserve. This network includes San Francisco Public Utilities Commission Peninsula Watershed lands, California state parks, the Monterey Bay National Marine Sanctuary, county parks, and other land held by regional land trusts.	How is it that NPS purports to "manage" lands owned by other public entities?
I.217	**Sweeney Ridge (including Cattle Hill and Picardo Ranch)** **Natural Zone** (majority of the area) The area would be managed to protect endangered species and the large contiguous natural landscape extending into the San Francisco Public Utilities Commission Peninsula Watershed. Visitors could experience the area through stewardship activities, improved trails, and *primitive camping. Connections to the*	Should reference plans and policies in Peninsula Watershed Management plan re: camping and trail access, and also fact that Scenic Easement does not require public access. There is no explanation of "primitive camping" making it virtually impossible to adequately analyze potential impacts. There is no analysis of potential fire hazard impacts associated with "primitive

	regional trail network and the surrounding public lands (San Francisco Public Utilities Commission lands, San Pedro Valley County Park, McNee Ranch, and Rancho Corral de Tierra) would be developed in coordination with other land managers. **Scenic Corridor Zone** (Sneath Lane and part of Sweeney Ridge) Trail amenities would be developed, and connections would be enhanced to the Bay Area Ridge Trail and the Sawyer Camp Trail in San Francisco Public Utilities Commission Peninsula Watershed. The San Francisco Bay Discovery Site National Historical Landmark would be preserved and interpreted. *Limited vehicular access to the discovery site would be permitted. A hikers' hut could be developed as part of a system of huts proposed for the Bay Area Ridge Trail.*	camping". *Potential for increased fire risk:* Please ensure that the potential primitive camping sites and the potential hikers' hut do not increase the potential for wildfire spreading to SFPUC lands. Re "limited vehicular access" to the Bay Discovery Site: What is the purpose? What is the proposed route and/or alternative routes of vehicle access? Would these be private or NPS vehicles? Private vehicles are generally not allowed on the SFPUC's Army Road except for utility purposes.
I.218-219	**Rancho Corral de Tierra** **Natural Zone** (majority of the area) The upland areas and land outside the existing equestrian centers would be managed to preserve the wild, open character of the landscape and offer trail-based recreation that is light on the land, including walking, hiking, bicycling, and horseback riding. Natural habitats and processes in the zone, which includes four creek corridors, would be restored to the greatest extent possible with the help of community stewards. Visitors would enjoy the scenic coastal environment through an enhanced and sustainable system of trails. The trail network would connect local communities to the park and link the ridges of Montara Mountain to the Pacific Ocean. *The National Park Service would work with the San Francisco Public Utilities Commission to complete a trail connection to Sweeney Ridge through the Peninsula Watershed's northwest corner along Whiting Ridge.* Unnecessary roads could be converted to trails or removed. *Exploration of the park could be facilitated by scenic overlooks, sites for picnicking, primitive camping sites, and possibly a hikers' hut in a remote setting.*	This is one of the few sections that actually describes what is proposed for the Peninsula watershed in the way of trails, yet the analysis does not provide any detail of these proposals or provide much in the way of analysis of the impacts of opening pristine areas to recreational users for the first time. See above comments for pages I.103 - 110. There is no analysis of potential impacts to butterfly habitat including the San Bruno elfin. Per the 5-Year Review for SBEB and Mission blue butterfly prepared by USFWS (http://ecos.fws.gov/docs/five_year_review/doc3216.pdf) , *San Bruno Elfin butterflies have been known from the Montara Mountain area, including Peak Mountain, since the recovery plan of 1984. The Montara Mountain area is adjacent to the SFPW and a good portion of Montara Mountain is in public protection. McNee Ranch State Park covers 253 hectares on the north slopes and is contiguous with San Pedro Valley County Park which covers 526 hectares and is contiguous with SFPW. However, some of the mountain is in private ownership, but the steepness of its slopes and access problems have kept it relatively free from*

		development. No scheduled surveys are conducted on Montara Mountain and nearby peaks, but according to Arnold (pers. Comm.. 2009) viable populations of San Bruno elfin butterflies remain on Montara Mountain and nearby peaks. Proposed park uses should be consistent with the federal protections outlined in the USFWS's 5-Year Review of the San Bruno Elfin Butterfly and Mission Blue Butterfly (http://ecos.fws.gov/docs/five_year_review/doc3216.pdf page 18): *The National Park Service will inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the (National Park) Service will inventory other native species that are of special management concern to parks (such as rare, declining ,sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance. The (National Park) Service will determine all management actions for the protection and perpetuation of federally, state, or locally listed species through the park management planning process, and will include consultation with lead Federal and state agencies as appropriate.* *Issue related to the potential for trespass* The section regarding the preferred alternative's potential Natural Zone at Rancho Corral de Tierra (Volume I, page 218) mentions that "the upland areas and land outside the existing equestrian centers would be managed to preserve the wild, open character of the landscape and over trail-based recreation that is light on the land, including walking, hiking, bicycling, and horseback riding". Please ensure that the increased use of the Natural Zone by walkers, hikers, bicyclers, and horseback riders does not result in increased trespass onto SFPUC lands.

		Please ensure that the potential primitive camping sites and the potential hikers' hut do not increase the potential for wildfire spreading to SFPUC lands.
I.220	**Phleger Estate** **Natural Zone** In all alternatives, the area would be managed to provide trail-based recreation in a natural and contemplative setting that complements the more developed recreation facilities at adjacent Huddart County Park. The redwood forest ecosystem, including West Union Creek and threatened and endangered species, would be protected and restored. The history of logging on the estate and its role in the settlement of San Mateo County would be interpreted. *Trail connections to adjacent lands and the regional trail system would be pursued in collaboration with San Mateo County and San Francisco Public Utilities Commission. These connections would include the Bay Area Ridge Trail, potential access from trailheads on Cañada Road and Skyline Boulevard, and a multiuse trail connection between Cañada Road and Skyline Boulevard north of Phleger Estate* Community stewardship of the site could contribute to trail and habitat improvements. The National Park Service would explore community trailheads and partnerships with the Woodside Store historic site. ***San Francisco Public Utilities Commission Peninsula Watershed*** ***Easements*** ***Natural Zone*** *(majority of the area, corresponding with the scenic easement)* *Park managers would continue to cooperate with the San Francisco Public Utilities Commission for the preservation of the natural, cultural, scenic, and recreational features of the watershed. Within this zone, the park would promote completion of the Bay Area Ridge Trail connection from the Phleger Estate to Highway 92 and a new trail connection between the Bay Area Ridge Trail and the California Coastal Trail on the existing*	At least the watershed management plan is referenced and the proposal reflects what is in the plan. But some of the proposed trails are within the Scenic Easement area, such as the Canada Road/ Skyline Boulevard trail north of the Phleger Estate, and an argument can be made that by promoting such trails, the NPS is not managing the Scenic Easement in accordance with its terms as required by 16 USC 460bb(p). The preferred alternative figure and the Alternative 2 figure for San Mateo County shows the Polhemus lands as within the Scenic and Recreation Easement; I don't believe this is the case. Polhemus lands and SFPUC property along San Mateo Creek below Crystal Springs Dam is not in the Scenic and Recreation Easement. See above comments for pages I.103 - 110. Also, the Peninsula Watershed Management Plan describes a watershed visitor center (Management Action pub4, pg. 5.16-2), but does not state a location near Pulgas Temple or call for collaboration with GGNRA. The GMS / EIS text makes it sound like it is the policy of the SFPUC (per the watershed plan) to site a visitor center at or near Pulgas Temple in partnership with the GGNRA.

	alignment over Whiting Ridge; this would connect Sweeney Ridge with McNee Ranch and Rancho Corral de Tierra. **Scenic Corridor Zone** (eastern area closest to Highway 280, corresponding with the scenic and recreation easement) Park managers would promote preservation of natural, cultural, and scenic values with improved public access on trails. Proposed trail improvements include connecting the existing San Andreas multiuse trail to Sweeney Ridge via Sneath Lane, and improving trail access to the Phleger Estate from a new trailhead on Cañada Road. Park managers also would promote the implementation of other trails proposed in the 2002 *San Francisco Watershed Management Plan*, including completion of the north–south corridor through the watershed in areas of low sensitivity. *The park would work with the San Francisco Public Utilities Commission to provide a multiuse trail connection through the Peninsula watershed lands between Cañada Road and Skyline Boulevard north of Phleger Estate.* Preservation of scenic views along the trails, Cañada Road, Skyline Boulevard, Interstate 280, and its vista points would also be promoted in cooperation with the San Francisco Public Utilities Commission and Caltrans. The National Park Service would collaborate with the San Francisco Public Utilities Commission in creating a watershed visitor education center near the Pulgas Water Temple on Cañada Road, as described in the 2002 *Watershed Management Plan*. Additional coordination with the Juan Bautista De Anza National Historic Trail could also be provided.	
I.243	**Alternative 2** **Sweeney Ridge (including Cattle Hill and Picardo Ranch) Natural Zone** This area would be managed to protect endangered species and restore the large contiguous natural landscape *extending into the San Francisco Public Utilities Commission Peninsula Watershed. Visitors would experience the wild character of these lands through stewardship activities, trail use, and primitive*	Comment should refer to Peninsula Watershed Management Plan policies on trails and camping. See above comments for pages I.103 - 110. Also, there is no analysis of potential fire hazard. Prior to closing roads, they should be evaluated for emergency access for fire fighting equipment and personnel.

	camping. Sneath Lane could be converted to a trail and connect to the Bay Area Ridge Trail in the San Francisco Public Utilities Commission Peninsula Watershed. *Unnecessary fire roads could also be converted to trails or removed if not historic, and natural resources restored.* If acquired, a trailhead would be located at Picardo Ranch with modest visitor support facilities (restroom, picnic tables, parking).	
I.244	**Rancho Corral de Tierra** **Natural Zone** (majority of the area) Management would be the same as alternative 1, but with fewer and more primitive visitor amenities. Unnecessary fire roads could be converted to trails or removed if not historic, and natural processes restored. **Sensitive Resources Zone** (creek corridors) In this alternative, *the four equestrian facilities would be removed or relocated away from creek corridors over time. The park would partner with surrounding land managers to restore the creek corridors, reconnect them to the ocean, and restore anadromous fish passage.*	*Potential for increased fire-fighting capability:* It is not clear whether the existing equestrian facilities include infrastructure that, once the equestrian facilities were removed, could be used for fire-fighting efforts. If the equestrian facilities do include such infrastructure, please evaluate whether the potential use of those facilities for fire-fighting efforts outweighs the recreational benefits of those equestrian facilities—and therefore whether the removal of the equestrian facilities should be incorporated into the preferred alternative.
I.244-255	**San Francisco Public Utilities Commission Watershed Easements** **Sensitive Resources Zone** (majority of the area) In this alternative, the park managers would continue to cooperate with the San Francisco Public Utilities Commission for the preservation of the natural, cultural, scenic, and recreational features of the watershed. Park managers would promote natural resource preservation and highly managed public access in most of the watershed to support the values that resulted in designating this area as the core of the UNESCO Golden Gate Biosphere Reserve. **Scenic Corridor Zone** (Crystal Springs Regional Trail / Juan Bautista de Anza National Historic Trail corridor)	For the SFPUC Peninsula Watershed lands, the No Action alternative accurately describes NPS's current management role under Title 16, with the word "manages" perhaps better stated as "administers"; the other alternatives exceed the congressional authorization: *Managed by San Francisco Public Utilities Commission to protect water supply and ecological and cultural resources. The NPS manages a scenic easement and a recreation easement to protect natural values and limited recreational uses compatible with ongoing water operations.* In particular, the wording of Alternative 3 on the table implies that

	Park managers would promote access and visitor services along the existing multiuse trail and the implementation of trail improvements proposed in the *San Francisco Watershed Management Plan* (2002), including completion of the north–south corridor through the watershed in areas of low sensitivity. Additional coordination with the Juan Bautista De Anza National Historic Trail could also be provided. **Alternative 3:** **Phleger Estate** **Natural Zone** Management of this zone would be the same as that described under alternative 1. Interpretation would explore the estate's similarities with and differences from Muir Woods National	NPS "manages" the watershed and should be revised: *Manage majority of area, corresponding to scenic and recreational easement, as in Alternative 1.* • *Manage eastern edge, adjacent to Highway 280 as in Alternative 1, but with emphasis on promoting enhanced interpretation to highlight the scope of the water system with its origins in Yosemite National Park.* See above comments for pages I.103 - 110.
I.262	Monument. **San Francisco Public Utilities Commission Watershed Easements** **Natural Zone** (majority of the area corresponding with the Scenic Easement) Management of this zone would be the same as that described	
I.263	under alternative 1. **Scenic Corridor Zone** (eastern edge, adjacent to Highway 280) Same as alternative 1, but with an emphasis on promoting enhanced interpretation to highlight the scope of the water system with its origins in Yosemite National Park and enhanced interpretation of Spanish exploration and colonization efforts including the Bay Area Discovery Site and Anza and Portola routes. Table comparing alternatives	The table comparing potential impacts on park lands, in the row labeled ***Water Resources and Hydrologic Processes***, does not contain enough detail to discern whether proposed new trails in the Peninsula Watershed would have permanent impacts on water quality.

I.286		
II.38	**San Mateo County Watersheds.** The watersheds in San Mateo County have not been comprehensively studied due to piecemeal land management by various agencies and private holdings. The watersheds that wholly or partly contain park land include Milagra, between Sweeney and Milagra; Sweeney; San Pedro Creek; Crystal Springs (part of the larger San Francisco watershed); and West Union / San Francisquito Creek. The *23-square-mile San Francisco watershed* is owned and managed by the San Francisco Public Utilities Commission and is part of the water supply storage for the City and County of San Francisco. This watershed includes San Andreas Lake, Crystal Springs, Pilarcitos Lake, and a portion of the Pilarcitos Creek watershed. The San Pedro Creek watershed drains portions of the San Francisco watershed lands, Picardo Ranch, and portions of Devil's Slide. The West Union Creek watershed contains a tributary to the Searsville Lake that drains the Phleger Estate at the south end of Golden Gate National Recreation Area (NPS 2005a).	Should read either 23,000 acres or 35.9 square miles. If the SFPUC "manages" the watershed, how can GGNRA also "manage" it as "park" land? The text should be revised throughout to make clear that SFPUC manages the land and GGNRA "administers" the easements in accordance with 16 USC §460bb(p).
II.39	**San Mateo County.** Much of San Mateo County is part of the Santa Clara Valley Groundwater Basin, with portions in the San Francisco basin. Santa Clara Valley groundwater sources include coastal marine terrace or stream valley alluvial deposits where groundwater is stored in loose, unconsolidated, coarse-grained sand, and upland granitic bedrock of the Santa Clara Formation, where groundwater is stored in weathered rock openings and in rock fractures. The granite bedrock has limited storage capacity, but the alluvial deposits are good sources of groundwater. Over the long term, the marine terraces appear to be in hydrological balance; however, in dry years, pumping has reduced the water table to near sea level—increasing the risk of	Text does not differentiate between Santa Clara valley basin and small coastal terrace aquifers, where most park units drain to; also does not acknowledge southern westside basin and differentiate between it and SCV basin.

	salt water intrusion. The water is slightly alkaline with a mean pH value of 7.3 based on 20 samples. Hardness for the 20 wells sampled averaged 471 milligrams per liter (mg/L) as calcium carbonate (CaCO3), in excess of the 180 mg/L minimum value for water to be classified as very hard (CWA 2004).	
II.43	Some limited water quality monitoring has been conducted within the West Union / San Francisquito Creek watershed (West Union Creek is located within this watershed), but no monitoring has been conducted on NPS lands. The San Francisquito Creek Watershed Council is actively involved in management and monitoring of this watershed. Through the watershed council, consultants have monitored the Bear Creek watershed (including West Union Creek). However, no sites have been located within Phleger Estate or the adjacent county park (NPS 2005a). San Francisquito Creek is listed on the Section 303d list as being impaired by sediment. Concerns in West Union Creek, a San Francisquito Creek tributary within Phleger Estate, include erosion and runoff from trails. Landslides and significant bank erosion have been observed (NPS 2005a). Vegetation Communities Figure	If the NPS is going to include the Peninsula Watershed as it was part of a "park", then the analysis has to have the detail required- the SFPUC has lots of data on water quality that is not even mentioned here. Figure on vegetation communities following this page does not differentiate between easement lands on watershed, as is displayed in other figures.
II.54		
II.65-66	***San Francisco Garter Snake – Federal Endangered; State Endangered*** The San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) is endemic to the San Francisco peninsula and is currently restricted to localities within San Mateo County. This listed species is primarily threatened by the loss and alteration of suitable wetland habitat due to urban development, freeway and road construction, illegal collection,	Is the watershed in or out of the planning area? Text does not include extensive data on SFGS in the watershed. Extensive natural resource data can be found in the programmatic EIRs for the Peninsula Watershed Management Plan and the Water System Improvement Program. In terms of SF garter snake, the FWS 2006 review specifically

II.92	agricultural practices, and trampling. It is considered semi-aquatic and is found along the margins of ponds, lakes, streams, and estuaries (above tidal influx). It feeds on small amphibians and fish, especially the federal listed threatened California red-legged frog (*Rana aurora draytonii*). *The planning area contains three sites (Sweeney Ridge, Milagra Ridge, Mori Point / Sharp Park) that appear to have suitable habitat for the San Franciscogarter snake;* however, no recent surveys specifically designed to locate the snake and assess habitat have been conducted. Only Mori Point / Sharp Park has had a documented occurrence of the San Francisco garter snake; however, no recent population data are available (NPS 2005a). Cultural Resources Figure	calls out existing and new trails on SFPUC watershed land as being a threat to the species. http://www.fws.gov/cno/es/San%20Francisco%20Garter%20Snake%205%20Year%20Review.FINAL.pdf Cultural resources figure following this page does not include Peninsula watershed lands. Is the watershed part of the planning area or not?
II.161	At San Francisco Public Utility Commission (SFPUC) watershed trailheads, parking is likewise along roadsides. However, there are more than 40 spaces at the southern end of the popular Sawyer Camp Trail. At Rancho Corral de Tierra, parking is associated with the equestrian facilities.	Is the watershed in or out of the plan? It is, at least with regard to trails. If GGNRA is proposing new watershed trails in its alternatives, doesn't that mean the document must include the pertinent detail on watershed resources and include the watershed in the APE for cultural resources, for example? See comment for II.65-66 above.
II.162	The *San Mateo County Bicycle Plan* proposes improvements to routes popular with cyclists, including Cañada Road, and while improvements are not planned, a route allowing bike access from the San Mateo County suburbs east of Interstate 280 to the road and mountain bike trails west of Skyline Boulevard has been identified as a priority for cyclists. This could require bicycle access in the vicinity of Phleger Estate.	There is no mention of the restrictions in the Scenic Easement on trail access, yet alternatives mention providing such access. See above comments for pages I.103 - 110.

	Pedestrian Pedestrian access to Golden Gate National Recreation Area park sites in San Mateo County is limited. Trailheads at a few park sites, such as Milagra Ridge, Sweeney Ridge, Mori Point, Pedro Point, and Rancho Corral de Tierra, are adjacent to suburban neighborhoods and thus are relatively accessible to pedestrians (although sidewalks leading to the park sites are sometimes lacking). However, pedestrian circulation within San Mateo County park sites is in many cases very good, as most San Mateo County park sites are essentially open space preserves with trail networks. Also, two park sites, Rancho Corral de Tierra and Phleger Estate, offer extensive equestrian access. Trails within San Mateo County Golden Gate National Recreation Area park sites are detailed in appendix F.	
II.212 II.213	**COMMON TO ALL ALTERNATIVES AT GOLDEN GATE NATIONAL RECREATION AREA AND MUIR WOODS NATIONAL MONUMENT NATURAL RESOURCES** The trails policy includes goals on sustainable trail design and best management practices, which would assist the National Park Service in improving habitat quality and integrity by reducing impacts from erosion, exotic and invasive species, and habitat fragmentation. **Conclusion** Overall, impacts to natural resources resulting from these policies would be long term, beneficial, and would range from negligible to moderate, throughout Golden Gate National Recreation Area and Muir Woods National Monument.	The entry of the general public to areas long closed, and construction of trails in sensitive habitat areas, may not be "beneficial" or of "negligible to moderate" impact. Our prime responsibility is water supply. The western and northern edges of the Watershed have had few biological surveys to document sensitive species and habitat. Mainly because we have little construction or impact there by our own activities. The lack of surveys on [western and northern edges of the Watershed] does not mean there are not sensitive resources here. Off-road trespassing from the western perimeter has impacted sensitive resources in the interior of the watershed. How will this be guarded against with all this new public access? See above comments for pages I.103 – 110, particularly references to USFWS & CDFG comments on trail alternatives proposed in the Draft Peninsula Watershed Management Plan for Fifield Cahill Ridge Trail. There is insufficient analysis of potential impacts to support the conclusion of negligible to moderate impacts to natural resources. There is no analysis of

		potential fire hazard impacts for any of the proposed trails in the GMP / EIS, and no data re existing conditions (let alone potential impacts) to natural and cultural resources on the SFPUC's Peninsula Watershed. SFPUC has limited resources, but has assisted with fire-guarding the perimeter on and next to GGNRA property (sometimes the only fire-guarding that exists near their property). With the introduction of more public use also comes the necessity of fire protection. GGNRA firefighting capability needs to be included as part of their plans on their property.
II.220	**TRANSPORTATION** **Analysis** From Phleger Estate, trail connections to adjacent lands and the regional trail system would be pursued in collaboration with San Mateo County and San Francisco Public Utilities Commission. These connections would include the Bay Area Ridge Trail and a potential multiuse trail connection between Cañada Road and Skyline Boulevard north of Phleger Estate... All of these measures would provide, individually and cumulatively, a long-term, moderate, beneficial impact on accessibility of these remote sites by trails connected to neighborhoods and to larger regional trails. Improved and new trailheads, trailhead parking, and improved directional signs, site identification, and wayfinding signs would also add considerable benefits. Long-term, minor, beneficial effects would be gained through slightly increasing parking at Shelldance Nursery and Sweeney Ridge.	Why are new trails always beneficial in terms of transportation impacts since most users arrive by car? Even bicyclists often transport themselves and their bicycle to the trailhead via car.
II.228	***Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)*** ***Analysis***	Text does not distinguish between areas where there are no trails or facilities and areas where such facilities would be removed, although implication is that new facilities in undeveloped areas would have "moderate" impacts.

II.229	In other areas (such as... Rancho Corral de Tierra in San Mateo County) *new development would cause minor to moderate adverse impacts to soils and geologic resources because these areas are undeveloped and the impacts would be new.* ***Conclusion*** The elimination of unsustainable roads and trails would reduce soil erosion, resulting in long-term, minor, beneficial, localized impacts to soils. The removal of facilities and structures would result in long-term, minor to moderate, beneficial, localized impacts, although new recreational development would have long-term, adverse, localized impacts on soils and geologic resources. During the removal or construction period, short-term, minor, adverse impacts (such as increased erosion or compaction in adjacent areas) would occur. *Overall, adverse impacts would occur from new recreational development and expanded visitor use.* Beneficial impacts would occur from trail and road maintenance, the restoration of disturbed sites and creeks, and improved resource understanding and public support.	See above comments for pages I.103 - 110. Also, there is no analysis of potential fire hazard. Prior to closing roads, they should be evaluated for emergency access for fire fighting equipment and personnel. There is insufficient analysis to support the conclusion.
II.233	Alternative 1 analysis- New and/or improved recreational development—including new visitor facilities and amenities at 1) Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley along State Route 1 and Conzelman, McCullough, and Bunker Roads in Marin County; at 2) Upper Fort Mason, Fort Miley, China Beach, and Fort Funston in San Francisco County; and at 3) Milagra Ridge, Sweeney Ridge, *Phleger Estate, and Rancho Corral de Tierra in San Mateo County*—would have short-term, negligible to minor, adverse, localized impacts on water quality from increased erosion and sedimentation, and the potential for chemical contamination resulting from inadvertent chemical spills	Report downplays the permanent impacts of new, visitor oriented development in pristine watershed areas and does not even mention potential impacts to SFPUC watershed resulting from proposed trails at Whiting Ridge, Canada Road to Skyline Boulevard north of Phleger Estate, and other locations. See above comments for pages I.103 - 110. Also, there is no analysis of potential fire hazard from proposed trails. In addition, there is insufficient analysis of existing conditions on the SFPUC Peninsula Watershed and potential impacts to natural and cultural resources to support the conclusion.

II.234	from heavy equipment at construction sites. Similar impacts to water quality could occur over the long term due to the increased potential for urban pollutants to runoff from parking lots and other developed features. In some areas (such as at Shelldance Nursery and Devil's Slide in San Mateo County) adverse impacts would be negligible to minor because the development would occur in previously developed or disturbed sites. *In other areas (such as at Rancho Corral de Tierra in San Mateo County), adverse impacts to water resources would be minor to moderate because new development would occur in undisturbed sites.* Conclusion: Generally, adverse impacts would occur from new recreational development and expanded visitor use. Beneficial impacts would occur from trail and road maintenance and the restoration of disturbed sites and creeks. No impairment of water resources would result from this alternative.	
II.237	No action alternative-Natural/ Biological Resources habitat (veg & wildlife) *Recreational use would continue to reduce habitat integrity by trampling plants, introducing and increasing the spread of exotic species, causing disturbance (flushing and displacement) to animals, and increasing the potential for human-wildlife conflict resulting from habituation due to the presence of humans and the introduction of unnatural food sources. Recreational use also generates noise and unnatural light sources that affect wildlife. These activities would result in long-term, minor to moderate, adverse, localized impacts throughout the park.*	If this is the status quo in areas where recreation is allowed, the analysis for the alternatives must note these impacts for areas proposed for trails and other recreation where such access does not exist.
II.238	***Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)***	EIS does not distinguish between existing park areas where facilities will be better managed (e.g. trail closures/ modification) and areas proposed for new visitor access, which under the no

	Analysis The impacts to vegetation and wildlife from the continued presence and maintenance of existing facilities (including structures, roads, and trails) under alternative 1 would be less than the no-action alternative because impacts to vegetation and wildlife habitat caused by erosion from unsustainable trails and roads would be reduced. Alternative 1 would develop a sustainable trail system and eliminate unneeded and unsustainable roads and trails, as well as maintain all trails and roads. Impacts to native habitat from fragmentation and exotic species would be reduced. These activities would result in longterm, minor, beneficial, localized impacts on vegetation and wildlife... *Visitor access and use would be expanded under alternative 1,* potentially resulting in additional impacts to vegetation (trampling) and wildlife (disturbance) along trails and at primary visitor use areas—the impact would be long term, minor, adverse, and localized. New and/or improved recreational development including new visitor facilities and amenities at 1) Stinson Beach, Kirby Cove, Forts Barry and Cronkhite, Slide Ranch, Golden Gate Dairy, Tennessee Valley, and Marin City Ridge / Gerbode Valley along State Route 1 and Conzelman, McCullough, and Bunker Roads in Marin County; at 2) Upper Fort Mason, Fort Miley, China Beach, and Fort Funston in San Francisco County; and at 3) Milagra Ridge, *Sweeney Ridge, Phleger Estate, and Rancho Corral de Tierra in San Mateo County* would have long-term, minor, adverse, localized impacts on vegetation and wildlife due to the permanent loss of plants and wildlife habitat. Short term, minor, adverse impacts to vegetation would also occur from injury or loss of plants during construction activities; however, the area would be replanted with native plants and the natural habitat would be reclaimed. Similarly, short-term adverse impacts to wildlife, such as disturbance, would occur during construction.	action alternative, are said to have "long-term, minor to moderate" impacts. With regard to the Peninsula Watershed, the no-action alternative should be considered the alternative having the least impact. There is insufficient analysis of existing conditions and potential impacts to natural and cultural resources to support this conclusion. Also, there is no analysis of potential fire hazard. Prior to closing roads, they should be evaluated for emergency access for fire fighting equipment and personnel.

II.240	The rehabilitation and use of Pier 4 at Fort Mason would result in impacts (habitat disturbance during construction) to marine resources—the impact would be short term, minor, adverse, and localized. ***Conclusion*** The development of a sustainable trail system and elimination of unneeded and unsustainable roads and trails, the removal of facilities/structures with reclamation of disturbed building sites, and habitat restoration efforts would result in long-term, minor to moderate, beneficial, localized impacts on vegetation and wildlife. The expansion of visitor access and use and the development of new or improved recreational facilities would result in long-term, minor, adverse, and localized impacts. The construction activities related to these developments would result in short-term, minor, and adverse impacts... *No impairment of vegetation or wildlife resources would result from this alternative.*	
II.245	Special status species- no action alternative **Special Status Species (Federal and State Threatened and Endangered Species)** ***No-action Alternative*** ***Introduction*** In general, many of the impacts to vegetation and wildlife previously described in the habitat section would apply to special status species. For example, *visitor use and new development would result in changes that would have adverse impacts to listed species and their habitats.* ***Federal Threatened and Endangered Species*** **California red-legged frog (*Rana aurora draytonii*).** There has not been any designated critical habitat in Marin or San Mateo counties managed by Golden Gate National Recreation Area (Federal Register 71: 19244–19346). Collectively, impacts to the California red-legged frog resulting from NPS actions that are	Conclusion should be compared with impact to CRLF from proposed alternatives.

	part of the no-action alternative (the continuation of current management and trends) would be long term, beneficial, minor, and localized.	
II.247	**San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Because San Francisco garter snakes are currently restricted to localities in San Mateo County (the only documented occurrence is at Mori Point / Sharp Park). Two other locations within the planning area (Milagra Ridge and Rancho Corral de Tierra) appear to have suitable habitat to support breeding populations of San Francisco garter snakes (Swaim Biological Inc. 2006). In addition, two other sites (Sweeny Ridge and Cattle Hill) can provide connectivity between known snake populations or between high-quality aquatic habitats that potentially support San Francisco garter snakes (Swaim Biological Inc. 2006). Therefore, impacts would be restricted to these locations. Because California red-legged frogs are an important prey item for this species, effects on red-legged frogs are expected to have cascading effects on the snake.	No mention of populations on Peninsula watershed- populations could be affected by trail proposals- appears that the watershed is included from the perspective of new trail analysis, but is omitted from detailed analysis. There is insufficient analysis of existing conditions and potential impacts to conclude that impacts to SFGS would be limited to certain locations.
II.245-261	*See comments in column to the right re information missing from this section.*	The ESA Determinations for Alternatives I, II, and III are not quite complete. If the ESA determinations for the no action alternative include the statement "'may affect, likely to adversely affect' for project specific actions in the short term" (text and tables in Volume II, pages 245-251), then the ESA determinations for Alternatives I, II, and III should include the same statement (text and tables in Volume II, pages 252-261). Because the text that describes the potential impacts for each potentially impacted species is so similar among the different alternatives, it would be helpful to include a table that describes the differences in potential impacts for each alternative (as rows) for each potentially impacted species (as columns). *Issues related to marbled murrelets:* It is not clear why potential impacts to the marbled murrelet are not described in the Special Status Species (Federal and State

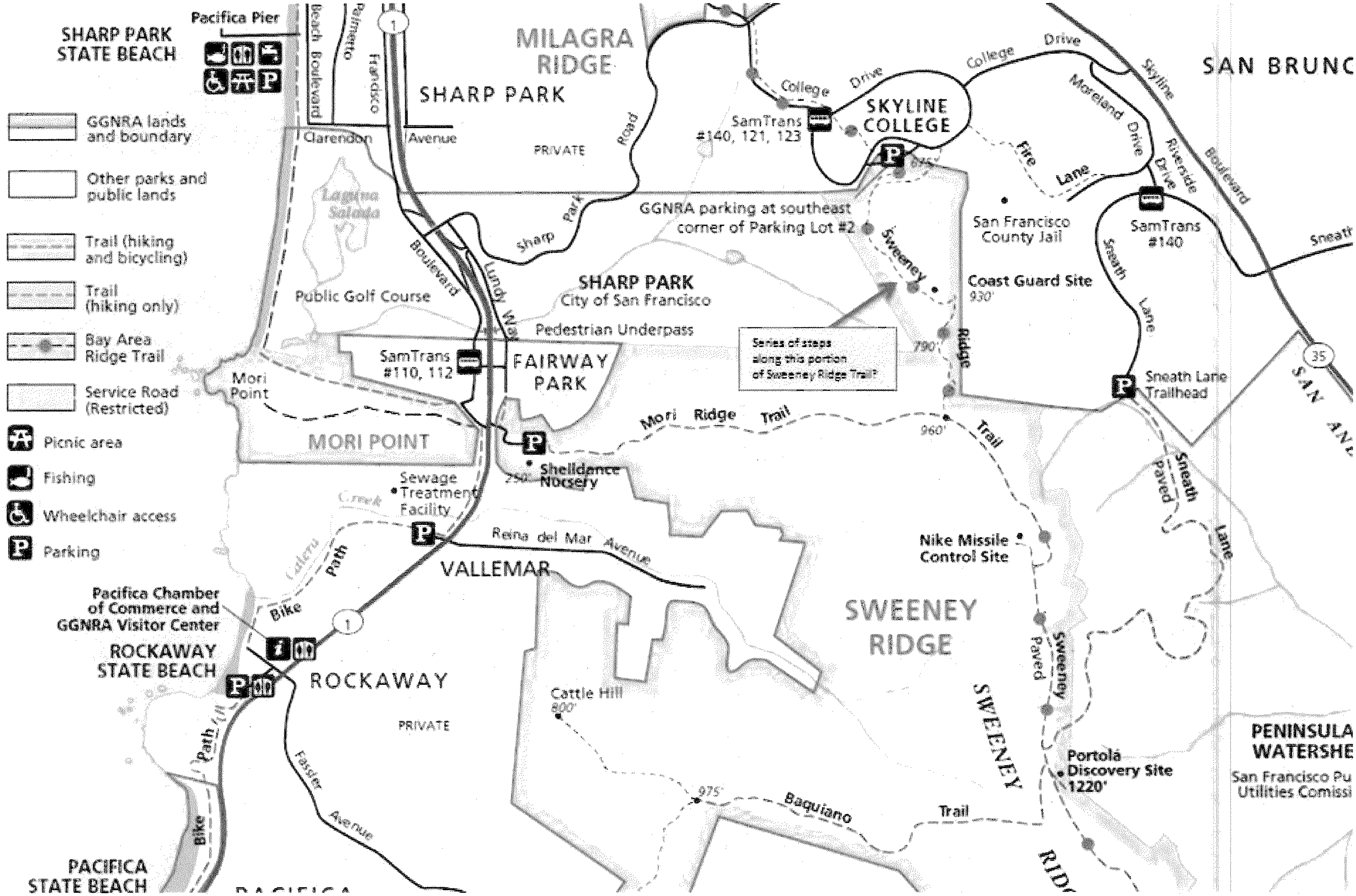
		Threatened and Endangered Species) section of the description of potential environmental consequences (Volume II, pages 245-261), especially since the statement in Volume II (page 62) "to evaluate the effects on special status species, a set of species considered likely or possible to experience impacts from GMP actions was selected for assessment based on the presence of suitable habitat within the project area and discussions with NPS biologists" is followed by a section devoted to a general description of the habitat requirements of the marbled murrelet in San Mateo County (Volume II, page 66). Please evaluate potential impacts to marbled murrelets, which include the following: the increased risk of fire due to the use of potential primitive camping sites and hikers' huts; the increased risk of marbled murrelet displacement due to an increase of corvids caused by trash build-up from hikers, bicyclists, horseback riders that use the trails in Sweeney Ridge and Rancho Corral de Tieera—as well as those who might trespass onto SFPUC lands [see Ellen's comment in previous email]; and the increase in the potential for marbled murrelet disturbance during construction activities (trails, huts, fencing, etc). [Please note, however, that current disturbance includes noise from highway 280 and the dump]. Monitoring of marbled murrelets on the upper Pilarcitos drainage and tributaries suggests that there is a stable or increasing nesting population of marbled murrelets on SFPUC lands and adjacent properties, particularly to the south (SFPUC Murrelet Monitoring Reports 2003-2011). In contrast, a recent and precipitous decline of nesting murrelets in historically occupied sites in the Santa Cruz Mountains, a core population at the southern edge of the species' range, is well-documented and is attributed, at least in part, to predation pressure by corvids (Henkel and Peery 2008). Avian predation by human "subsidized" species (especially corvids) has

		been shown to be a critical contributor to the declining murrelet population (Nelson and Hamer 1995, Evans Mach et al. 2003, Peery and Henry 2010). The perilous situation at other nesting sites, many of which are close to campgrounds and other anthropogenic sources of predator subsidies,adds importance to the relatively raven-free Pilarcitos Creek habitat, and underscores the crucial need for continued protection of the area from disturbance. Evans Mach, D.E., W.P. Ritchie, S.K. Nelson, E. Kuo-Harrison, T.E. Mamer. 2003. Methods for surveying Marbled Murrelets in Forests: A revised protocol for land management and research. Pacific Seabird Group: Marbled Murrelet Technical Committee, 6 January 2003. Henkel, L.A., and M. Z. Peery. 2008. Abundance and productivity of Marbled Murrelets off Central California during the 2007 breeding season. Final report to Command Trustee Council, California State Parks. January 2008. Nelson, S.K. and T. E. Hamer 1995. Nest success and the effects of predation on Marbled Murrelets. Pp. 89 98 in Ecology and conservation of the Marbled Murrelet (C. J. Ralph, G. L. Hunt, Jr., M. G. Raphael, J. F. Piatt, eds.). USDA For. Serv. Gen. Tech. Rep. PSW-152, Albany, CA. Peery, M.Z. and R.W. Henry. 2010. Recovering marbled murrelets via corvid management; A population viability management approach. Biological Conservation. http://bio.research.ucsc.edu/people/croll/pdf/Peery_2010.pdf

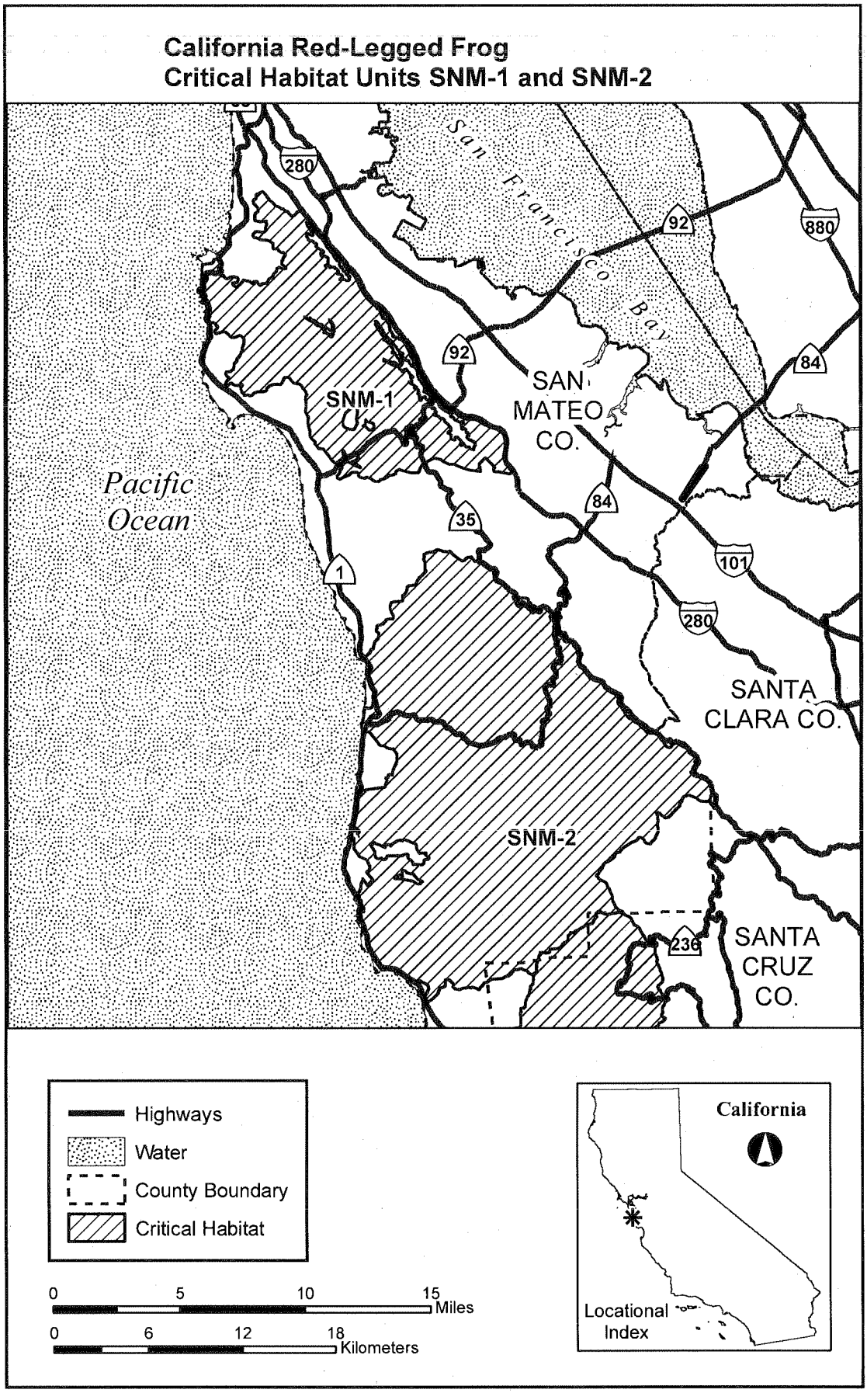
		This link to the 2006 USFWS publication provides information on avoiding visual and auditory harassment of murrelets entitled "Estimating the effects of auditory and visual disturbance to northern spotted owls and marbled murrelets in Northwestern California" http://www.fws.gov/arcata/es/birds/MM/documents/MAMU-NSO%20Harassment%20Guidance%20NW%20CA%202006Jul31.pdf
II.252	***Alternative 1: Connecting People with the Parks (NPS Preferred Alternative for Park Sites in Marin, San Francisco, and San Mateo Counties)*** **California red-legged frog (*Rana aurora draytonii*).** Impacts to California red-legged frogs and their habitat from alternative 1 would be the same as under the no-action alternative with the exception of impacts to habitat from expanded restoration of natural areas. The removal of the dam at Tennessee Pond and other infrastructure, and the restoration of riparian habitat in Lower Tennessee Valley would result in beneficial effects. Also, vegetation management, including exotic plant removal, especially in riparian and wetland areas in San Mateo County, would be greater than under the no action alternative, creating improvements to vegetative structure and condition that could improve breeding and foraging habitat—resulting in a beneficial impact. Impacts to the frog from new recreational development under alternative 1 would not occur because any new facilities would be sited to avoid existing or potential frog habitat.	Hard to tell what "new recreational development" is proposed since maps do not include detail about trail locations; how can trails avoid frog habitat since the species can wander 2 miles from breeding ponds? Much of the SFPUC watershed is also California red-legged frog critical habitat. There is insufficient analysis to support this conclusion.
II.252-253	**San Francisco garter snake (*Thamnophis sirtalis tetrataenia*).** Impacts to the San Francisco garter snake and their habitat under alternative 1 would be the same as under the no-action alternative with the exception of habitat improvements in San Mateo	Unlike the CRLF, there is no mention here of impacts from "new recreational development".

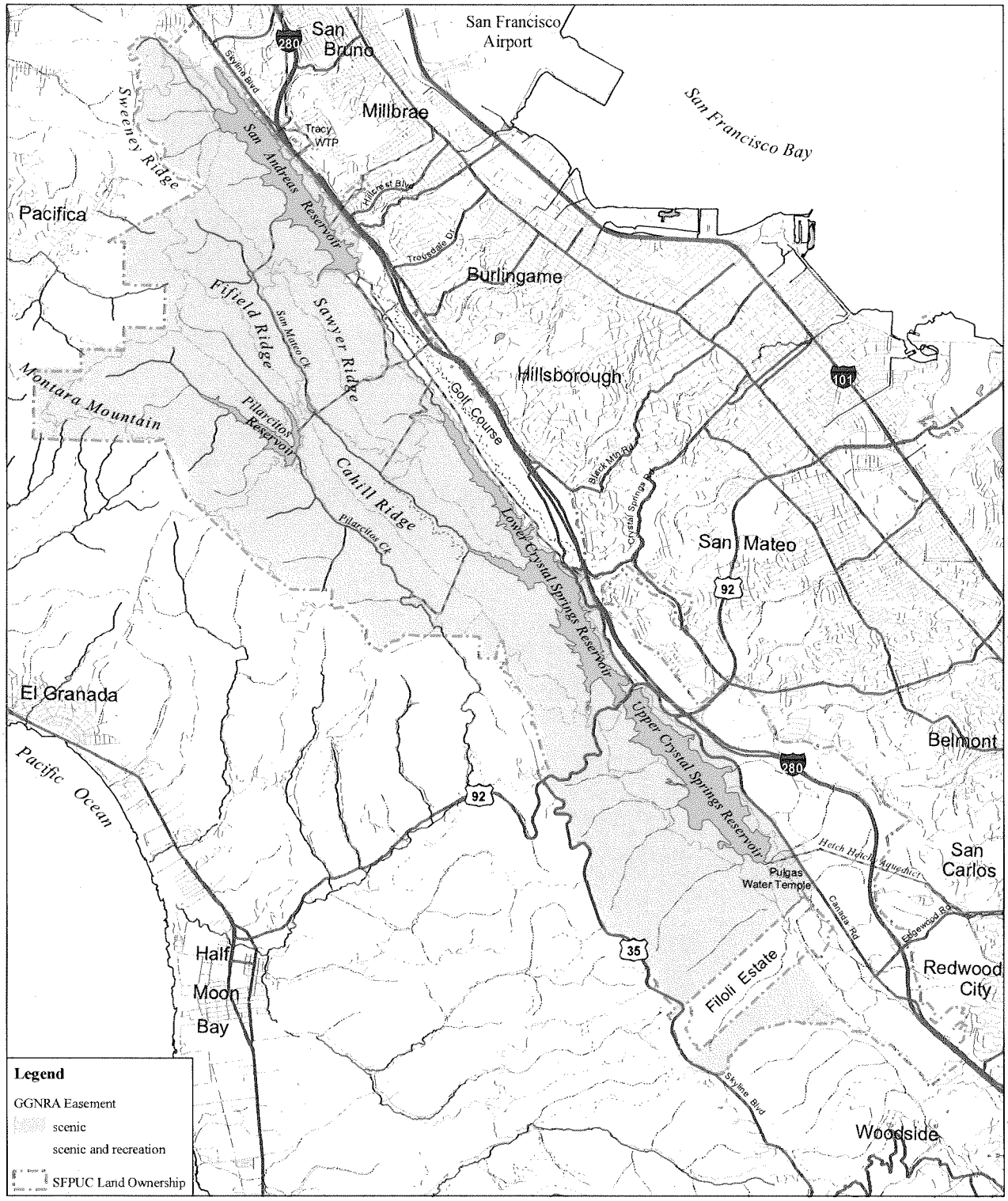
	County. Vegetation management, including exotic plant removal in riparian and wetland areas, would improve the structure and condition of vegetation that supports snakes—resulting in a beneficial impact. Impacts to the San Francisco garter snake resulting from NPS actions that are part of alternative 1 would be long term, beneficial, minor to moderate, and localized. The determination of effect under Section 7 of the Endangered Species Act would be "*may affect, not likely to adversely affect.*"	
II.323	Transportation analysis Connections to the regional trail network at the Shelldance Nursery and the surrounding public lands (SFPUC, San Pedro Valley County Park, McNee Ranch State Park, and Rancho Corral de Tierra) would be developed in coordination with other land managers. Additional connections to the Bay Area Ridge Trail and the Sawyer Camp Trail in the SFPUC watershed would be enhanced. These projects would have a long-term, minor to moderate, beneficial effect on connecting Golden Gate National Recreation Area sites in San Mateo County to other local and state park sites, regional trails, and surrounding communities....Visitors would access the coastal areas through an enhanced and sustainable system of multiuse trails. The trail network would connect local communities to the park and link the ridges of Montara Mountain to the Pacific Ocean. *Opportunities for a trail connection to Sweeney Ridge through the SFPUC watershed's northwest corner would be explored* Unnecessary roads could be converted to trails or removed. *These projects would have along-term, moderate, beneficial impact on visitor access*, connecting the coastal areas to each other and to surrounding communities.	Conclusion does not distinguish between existing and proposed new recreational access, or provide any meaningful traffic analysis of impacts caused by bringing new visitors to remote areas of the watershed. There is insufficient analysis of existing conditions and potential impacts to natural and cultural resources to support this conclusion. Also, there is no analysis of potential fire hazard. Prior to closing roads, they should be evaluated for emergency access for fire fighting equipment and personnel.
II.326	Alternative 2 transportation analysis ***San Mateo County*** In addition to the measures described in the "Actions Common to all Alternatives" section cited previously, the following narrative describes the transportation measures for San Mateo County. At	It is not clear whether proposed trails in the watershed are limited to those described on page II.326 , or also include access from Sawyer Camp to the Ridge Trail, proposed trails from the Phleger estate, and trails to connect communities to the ocean referenced in the document.

	Sweeney Ridge, Sneath Lane could be converted to a trail and connect to the Bay Area Ridge Trail in the SFPUC watershed. Unnecessary fire roads could also be converted to trails or removed if not historic, and natural resources restored. If acquired, a trailhead would be located at Picardo Ranch with modest visitor support facilities (restroom, picnic tables, parking). These measures are likely to result in a longterm, minor, beneficial impact at Sweeney Ridge. In the SFPUC watershed easement, park managers would promote access along the existing multiuse trail and the implementation of trail improvements proposed in the *San Francisco Watershed Management Plan* (2002), including completion of the north–south corridor through the watershed in areas of low sensitivity. Completion of these actions could have a longterm, minor to moderate, beneficial effect on access to these areas.	There is insufficient analysis of existing conditions and potential impacts to natural and cultural resources to support this conclusion. Also, there is no analysis of potential fire hazard. Prior to closing roads, they should be evaluated for emergency access for fire fighting equipment and personnel.



SHARP PARK STATE BEACH
Pacifica Pier
GGNRA lands and boundary
Other parks and public lands
Trail (hiking and bicycling)
Trail (hiking only)
Bay Area Ridge Trail
Service Road (Restricted)
Picnic area
Fishing
Wheelchair access
Parking
MILAGRA RIDGE
SHARP PARK
PRIVATE
Beach Boulevard
Palmetto
Francisco
Clarendon
Avenue
Sharp Park Road
Boulevard
Lundy Way
Public Golf Course
SamTrans #110, 112
FAIRWAY PARK
Pedestrian Underpass
SHARP PARK
City of San Francisco
GGNRA parking at southeast corner of Parking Lot #2
SamTrans #140, 121, 123
College Drive
SKYLINE COLLEGE
Fire Lane
Moreland Drive
Skyline Boulevard
Riverside Drive
SamTrans #140
Sneath Lane
San Francisco County Jail
Coast Guard Site
930'
Sweeney Ridge
790'
875'
Series of steps along this portion of Sweeney Ridge Trail
Sneath Lane Trailhead
SAN BRUNO
35
SAN AND
Mori Point
MORI POINT
Mori Ridge Trail
960'
Trail
Shelldance Nursery
250'
Sewage Treatment Facility
Calera Creek
Bike Path
Reina del Mar Avenue
VALLEMAR
Sneath Paved Lane
Nike Missile Control Site
SWEENEY RIDGE
Sweeney Paved
Pacifica Chamber of Commerce and GGNRA Visitor Center
ROCKAWAY STATE BEACH
ROCKAWAY
PRIVATE
Cattle Hill
800'
Fassler Avenue
975'
Baquiano Trail
SWEENEY RIDGE
Portolá Discovery Site 1220'
PENINSULA WATERSHED
San Francisco Public Utilities Commission
PACIFICA STATE BEACH
1


California Red-Legged Frog
Critical Habitat Units SNM-1 and SNM-2
San Francisco Bay
Pacific Ocean
SNM-1
SNM-2
SAN MATEO CO.
SANTA CLARA CO.
SANTA CRUZ CO.
280
92
880
84
35
1
101
236
Highways
Water
County Boundary
Critical Habitat
0 5 10 15 Miles
0 6 12 18 Kilometers
California
Locational Index



San Francisco Public Utilities Commission
Natural Resources Division

N

0 1 2 Miles

Peninsula Watershed

Golden Gate National Recreation Area Scenic and Recreation Easements

J.Lukins 5/14/08 pGGNRA_easement_11x17.mxd

DON HORSLEY

Board of Supervisors
County of San Mateo

Superintendent Frank Dean
Building 201, Fort Mason
San Francisco, CA 94123

Dear Superintendent Dean,

I would like to commend you on all of the work you have put into the release of your Draft Management Plan. I know that your public outreach process, with the acquisition of Rancho Corral de Tierra, has been thorough and extensive.

While reviewing the Draft Management Plan, I was pleased to see that you plan to place special emphasis on engaging the community, enhancing visitors' experience, and protecting the cultural and natural resources of the lands. It also gives me great pleasure to know that your managers will make the preservation and restoration of the unique park land we have in San Mateo County a priority.

With regards to your acquisition of Rancho Corral de Tierra, I am in full support of you establishing safe trailheads near Highway 1. This will provide greater accessibility for all visitors and allow the trailheads and park land to blend with the local communities.

Although it is not addressed in the Draft Management Plan, I would like to comment on the future Dog Management Policy that will be in effect at Rancho Corral de Tierra. I was informed that when the acquisition of Rancho is complete, leashed-dogs will be granted access on specified trails. As stated in the past, I think this is critical and am pleased to know that it will be implemented. Once again, I would like to thank you for all of your hard work on your Draft Management Plan.

Sincerely,

Don Horsley, Supervisor
San Mateo County

County Government Center
400 County Center
Redwood City, CA 94063

Direct (650) 363-4569
Coastside (650) 573-2222
Fax (650) 363-1856

Department of Public Works

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COUNTY OF SAN MATEO

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November 4, 2011

Mr. Frank Dean, Superintendent
Golden Gate National Recreation Area (GGNRA)
Building 201, Fort Mason
San Francisco, CA 94123

Dear Mr. Dean:

Subject: Draft General Management Plan (GMP)/Environmental Impact Statement (EIS)

Thank you for allowing San Mateo County to provide comments on the GGNRA/Muir Woods National Monument Draft GMP/EIS. We note that throughout the document there is consistent reference to the need for working with other agencies. As you know, we are interested in being considered as potential partner in a variety of ways. We'd like to offer the following comments on the Draft GMP/EIS.

1) **San Mateo County Historical Association**

In completing the historic resource study for your parklands in San Mateo County, the documents did not mention the San Mateo County Historical Association (Historical Association) who is eager to work with GGNRA to interpret the historic and cultural resources on your lands.

2) **Sanchez Adobe**

This historic property is owned and managed by the San Mateo County Parks Division and jointly managed and interpreted in coordination with the San Mateo County Historical Association. There have been discussions between GGNRA, San Mateo County Parks, and the Historic Association about a potential joint partnership; however this is not mentioned in the Draft GMP/EIS.

Since 1978, the Historic Association has been a valuable partner with San Mateo County Parks. Their education programs are extremely popular, serving some 7,000 3rd and 4th graders and their escorts each year. They additionally operate the site for us and have done an outstanding job. We highly recommend the Historic Association as a valuable partner.

Unfortunately, the County has not had the ability to fund any significant capital improvements at the Sanchez Adobe site since its opening in the 1950s. The Sanchez Adobe Historical Site Master Plan, completed by County Parks in 2007 with the cooperation of the Historical Association, could be leveraged to allow for a mutually beneficial project that would include a three way partnership between the GGNRA, San Mateo County Parks and the Historical Association. The Sanchez Adobe Master Plan can be viewed at www.eparks.net, under Park Planning; Master Plans.

3) **Devils Slide**

The GMP discusses the need for interagency cooperation to facilitate connections between Pedro Point, Devils Slide (to be acquired by San Mateo County Parks), and San Pedro Mountain. However, there is no detailed discussion about where trailheads, signage, and visitor serving facilities will be located, or a budget to fund those improvements. The County of San Mateo welcomes GGNRA's support to develop the connections to access Devils Slide CA Coastal Trail from GGNRA lands at either end.

4) **Access to Sweeney Ridge**

Trailhead improvements and better parking accommodations should be studied at the Fassler trailhead, where public access to Sweeney Ridge is far easier and less expensive than the Shelldance Nursery.

5) **Corral de Tierra**

There is a lack of definition about where proposed trailhead improvements would go, or how many would be provided. The $980,000 cost estimate for potential trailhead and parking improvements should enable a more detailed definition about how many access improvements will be made, what they will be, and where they will be located.

6) **Montara Lighthouse**

A multi-agency center is suggested at the Montara Lighthouse Station. We agree with this proposal; however, it will be important to improve access in and out of that location, which is currently very busy on nice weather weekends. San Mateo County Parks is currently working with the Midcoast Park and Recreation Action Plan Committee on a Conceptual Plan for CA Coastal Trail improvements from Princeton-By-The-Sea to Devils Slide. County Planning is also currently completing Phase II of the Highway 1 Safety and Mobility Improvement Project, which covers the Princeton to Devils Slide area. GGNRA has actively participated in the development of both of these sets of plans. The current recommendation for both planning efforts is that the California Coastal Trail will align from

the south via Vallemar to the Montara lighthouse and then cross to the east side of Highway 1 to access Carlos in Moss Beach and Farralones to access Montara. CA Coastal Trail improvements and a safe crossing of Highway 1 should be anticipated at the Montara Lighthouse location.

7) Phleger Estate

Richards Road serves as the primary access to the Phleger Estate. It closely parallels West Union Creek, Steelhead trout habitat, and is in need of improvement for fire and service vehicle access and to reduce sedimentation. San Mateo County Parks is interested in working with GGNRA to fund and perform improvements to this road which provides access to both the Phleger Estate and Huddart County Park.

8) Woodside Store

There is mention made in the GMP about a possible partnership at the Woodside Store with San Mateo County Parks (the property owner), and the San Mateo County Historical Association. While we are open to discussion about what a partnership might look like there may be limitations to what is possible because parking availability is minimal and the community is not favorably inclined to increases in visitation.

9) Sawyer Camp Trail to Sneath Lane

The GMP references the need for multi-use trail improvements connecting Sawyer Camp Trail to Sneath Lane. Actually, the multi-use trail improvements would be connecting San Andreas Trail, the northern segment of Crystal Springs Trail, to Sneath Lane. Our understanding is that GGNRA received a considerable amount of mitigation funding from PG&E as part of the Jefferson Martin project through the SFPUC Watershed lands for construction of this trail segment, but the budget for the preferred alternative lacked mention of these important trail improvements.

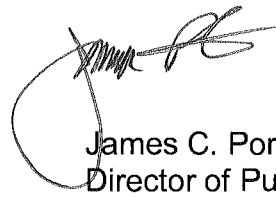
10) Funding Priorities

The County questions the $3 Million of priority funds to be set aside for the equestrian center at Rancho Corral de Tierra, considering so little capital is to be spent in other GGNRA parklands in San Mateo County to improve the connections between our respective lands. That the entire $4.6 Million in priority funding for San Mateo County is reserved for Rancho Corral de Tierra seems narrow in focus. Other possibilities in Pacifica as discussed above, and at the Phleger Estate should be considered as well.

Overall, the capital budget is concerning to us. GGNRA proposes $93,630,000 in priority projects of which GGNRA parklands in San Mateo County receive just $4,660,000, or only 5%. The combined high and low priority budget is $154,820,000 of which San Mateo County lands would get $10,110,000, or just 6.5%.

In summary, we feel further consideration for projects in San Mateo County should be included in your planning. Our residents have been very engaged in your planning process and have high expectations for improved recreational opportunities in the near future. Your consideration in this matter is greatly appreciated

Very truly yours,



James C. Porter
Director of Public Works

JCP:sdd
F:\users\admin\Parks Division\2011\GGNRA Letter Draft Mgmt Plan.doc

cc: Dave Holland, Deputy County Manager
Peggy Jensen, Deputy County Manager
Gary Lockman, Superintendent, Parks
Scott Lombardi, Superintendent, Parks
Sam Herzberg, Senior Planner, Parks
Mitch Postel, San Mateo County Historical Association

Planning & Building Department
Historic Resources Advisory Board

Mitch Postel
John Edmonds
Deke Sonnichsen
Robert Schoeppner
Elizabeth Bogel
Nancy Oliver
William Howland
Mike Bursak
Robert Crow
Greg Timm
Gael Erickson

County Office Building
455 County Center
Redwood City, California 94063
(650) 363-1837

November 1, 2011

Frank Dean, Superintendent
Golden Gate National Recreational Area
Building 201, Fort Mason
San Francisco, CA 94123

Dear Superintendent Dean:

SUBJECT: Comment Deadline for Draft GMP/EIS

I am the Chairperson for the San Mateo County Historic Resources Advisory Board (HRAB). Our existence is mandated in the San Mateo County General Plan (adopted in 1986) and the County's Historic Preservation Ordinance (adopted in 1984). Our purpose is to review all projects that may have any impact on historic or archaeological resources within unincorporated San Mateo County. The GGNRA Plan's references to interpretive and facilities needs at Sweeney Ridge and Milagra Ridge encompass unincorporated areas that we are duly charged to review.

In your list of "Consultation with Other Agencies, Officials, and Organizations," the HRAB is omitted. We are also aware that the list omitted the San Mateo County Historical Association (pursuant to that organization's letter from Peggy Jones (its Chairwoman) to you, dated October 10, 2011).

This is critical due to the document's notice that November 7, 2011, is the last day to submit comments on the plan. We formally request extending that deadline, since we only became aware of this document in mid-October. A reasonable extension will allow us time to review and consider the plan at our upcoming meeting in late November, with enough time to provide you our written comment. Thank you for your consideration.

Sincerely,

Nancy Oliver

Nancy Oliver
Chairwoman, HRAB

NO:DJH:fc – DJH0854_WFN.DOC

cc: U.S. Representative Jackie Speier
David Holland, Assistant County Manager
Peggy Jenson, Deputy County Manager
Jim Eggemeyer, Community Development Director
Mitch Postel, Director, County Historical Association

U.S. Department of Homeland Security

United States Coast Guard

Commander
Eleventh Coast Guard District

Coast Guard Island Bldg 50-8
Alameda, CA 94501
Staff Symbol: (dx)
Phone: (510) 437-3980
Fax: (510) 437-3223

16100

General Superintendent, Golden Gate National Recreation Area
Attn: Draft GMP/EIS
Fort Mason, Building 201
San Francisco, CA 94123-0022

Dear Superintendent,

Thank you for accepting comments to your General Management Plan/Environmental Impact Statement (Draft GMP/EIS) for Golden Gate National Recreation Area and Muir Woods National Monument. The United States Coast Guard has a number of operational assets within the boundaries of the properties that you manage, or very near to the properties that you manage. It will be to our mutual benefit to review these sites with you.

The Coast Guard's statutory authorities are listed in enclosure (1). It is worth emphasizing that our missions include: Law Enforcement, Safety of Life and Property at Sea, Waterways Management (including Aids to Navigation and Vessel Traffic Service), and serving as part of the Navy in wartime.

I refer you to Nautical Chart 18649 published by the National Oceanographic and Atmospheric Administration (NOAA), which portrays the locations of the many Aids to Navigation owned and maintained by the United States Coast Guard in the vicinity of the GGNRA, as well as any Private Aids to Navigation owned and operated by others.

The Coast Guard is in the process of transferring 5 Coast Guard owned lighthouse properties in the GGNRA to the National Park Service: Point Bonita, Lime Point, Alcatraz, Point Diablo, and Point Montara. The Coast Guard will continue to maintain a number of operational assets these lighthouse properties even after transfer to GGNRA. In addition to hosting the aid to navigation signals, lighthouse properties are often host to communication antennas or Vessel Traffic Service (VTS) equipment. One example is the Vessel Traffic Service (VTS) radar at Point Bonita.

Coast Guard Station Golden Gate may be the most prominent Coast Guard presence within the GGNRA. USCG Station Golden Gate missions include Search and Rescue, Law Enforcement and protection of critical infrastructure. We have a Special Use Permit from GGNRA for a 50 year term (enclosure (2)) for the property the Coast Guard refers to as Station Golden Gate.

A less obvious Coast Guard presence includes a number of antennas, cameras, radars and microwave sites associated with the Vessel traffic Service San Francisco, or with Coast Guard communications in general. Two proposed VTS camera sites (Point Blunt and Lime Point) have been in the planning stages for some time. Approval of those sites will enhance the Coast Guard's service to the maritime community by VTS San Francisco. See enclosure (3) - PT

Bonita: RADAR, VHF-FM, AIS, Microwave PT Bonita Lighthouse: HF, Microwave Station Golden Gate: VHF-FM Low Site San Francisco Presidio: R-21 RFF (VHF-FM, UHF High Site) Lime Point: Proposed VTS Camera Angel Island, PT Blunt: Proposed VTS Camera MT Tamalpais: VHF-FM, AIS, Microwave. Enclosure (3) is not inclusive of all Coast Guard sites.

The Coast Guard requires uninterrupted access to Coast Guard assets. We are equally concerned about security and force protection of Coast Guard assets. As an example, protection of Coast Guard assets may have to include continued restrictions on access to the lantern room of Alcatraz Lighthouse. Alcatraz Light continues to be an important Aid to Navigation supporting all manner of maritime traffic in San Francisco Bay. Public access and development at lighthouse properties should be coordinated with USCG in order to protect the Coast Guard's access for operating Aids to Navigation.

At the core of our presence within the GGNRA, we are concerned about service to community, whether from our Coast Guard Station, or through various other sites relating to our operations.

Several parts of the Management Plan call for increased restricted areas around places like Alcatraz. It is not clear what impact this might have on demand for Coast Guard services. Is the Park Service going to be requesting any CG assets to assist with enforcement of these zones? We are concerned that you may be creating a demand for increased Coast Guard services outside of a legislative process that brings sufficient resources to the Coast Guard. We assume that Coast Guard boats and personnel would continue have access through restricted areas in the performance of our duties – this might be made more explicit in the Management Plan.

These comments are not intended to have listed every single Coast Guard property or asset. These comments do provide you with highlights of those things we are most concerned about in the context of your Management Plan. My point of contact is Mr. Bill Meyn, Coast Guard District Eleven Resource Planner, at tel: 510-437-3980 or William.F.Meyn@USCG.MIL.

Sincerely,

L. D. Johnson, CDR, USCG
Chief of Contingency Planning
Eleventh Coast Guard District

Encl: (1) Coast Guard Statutory Authorities
(2) Coast Guard Station Golden Gate 50 year special use permit
(3) Coast Guard antenna and camera sites

Copy: USCG Sector San Francisco, CA
USCG Legal Service Command (LSC) West, Alameda, CA
USCG SILC Product Line Division – Portfolio Management Branch, Oakland, CA
USCG Civil Engineering Unit (CEU), Oakland, CA
USCG TISCOM (TIS-414), Oakland, CA
USCG C3CEN Remote Mission Systems Product Line (PL-R)
USCG C3CEN Command Centers Product Line (PL-C)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
San Francisco Bay National Wildlife Refuge Complex
1 Marshlands Road, Fremont, California 94555

December 8, 2011

Superintendent Frank Dean
Golden Gate National Recreational Area
Building 201, Fort Mason
San Francisco, CA 94123
ATTN: Draft GMP/EIS

RE: Comments on the Draft General Management Plan and Environmental Impact Statement

Dear Superintendent Dean,

We would like to take this opportunity to submit comments for the Draft General Management Plan (DGMP) and Environmental Impact Statement (EIS) for the Golden Gate National Recreational Area (GGNRA). The U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex manages a seabird restoration program known as the Common Murre Restoration Project. Our efforts are aimed at restoring depleted seabird populations along the central California coast, specifically those of the Common Murre (*Uria aalge*). As part of this project, we conduct a variety of studies examining breeding population sizes, reproductive performance, and impacts of human and natural disturbances to breeding seabirds. Study or survey sites within your planning area include Bird Island (or, Bird Rock) near Point Bonita, Alcatraz Island, San Pedro Rock, and Devil's Slide. Therefore, the comments provided focus on strengthening the preferred alternative within the coastal zone adjacent to sensitive seabird breeding or roosting areas.

Comments are divided into three parts and address the topic questions from the planning team: 1) What proposals or aspects do you like about the preferred alternative in this Draft General Management Plan/Environmental Impact Statement (DGMP/EIS); 2) Do you have any suggestions for improving the preferred alternative in this DGMP/EIS? If so, what are they; and 3) Do you have any other comments related to this DGMP/EIS?

1) Supported proposals or aspects of the preferred alternative in the Draft General Management Plan/Environmental Impact Statement:

The DGMP does an excellent job of recognizing important seabird nesting areas at Bird Rock (also called Bird Island; Marin County) and Alcatraz Island. We support the designation of the offshore areas at Point Bonita Cove and Bird Rock as a Sensitive Resources Zone. Bird Rock is an important roosting area for Brown Pelicans, Brandt's Cormorants, and other seabirds. The rock has also supported breeding Brandt's and Pelagic Cormorants, Western Gulls, and more

recently, Common Murres. Murres were first observed attending Bird Rock in 2007 and breeding was verified in 2008, 2010, and 2011. Additionally, the high level of recreational use in this area may make the seabirds nesting and roosting in the area susceptible to impacts from human disturbance. Thus, additional protections will benefit seabirds there.

In addition, you should re-examine the nomenclature for Bird Rock/Bird Island. On the USGS topographic map and the U.S. Fish and Wildlife Service Catalog of California Seabird Colonies, it is referred to as Bird Island.

2) Suggestions for improving the preferred alternative in this DGMP/EIS:

There are several instances where the currently identified preferred alternative can be strengthened by adding elements of alternative 2.

Pedro Point, Devil's Slide, and San Pedro Mountain
We support zoning the Devil's Slide Area west of Highway 1 as a Sensitive Resources Zone as identified in alternative 2. Since 1996, we have been working to restore a Common Murre colony at Devil's Slide as well as conducting breeding studies on various seabird species. The designation of this area as a Sensitive Resources Zone will help protect this sensitive seabird colony. In particular, several bird species that nest on the mainland cliffs would benefit from this designation, including Pelagic Cormorants, Brandt's Cormorants, Common Murres, Black Oystercatchers, Peregrine Falcons, Great Horned Owls, and Western Gulls. Managing this area as a Sensitive Resources Zone will be beneficial especially since the planned closing of the Devil's Slide section of Highway 1 and opening of the pedestrian/bike trail will result in a large increase in recreational use of the area, with potentially large impacts to breeding seabirds from human disturbance.

Alcatraz Island – Offshore Bay Environment
We support extending the Sensitive Resources Zone to 300 feet from the island's shore as well as demarcation buoys as outlined in alternative 3. Our monitoring at several seabird colonies in central California has shown that keeping boats and kayaks at this distance is effective for reducing disturbance to seabirds. Given the high volume of boat traffic off Alcatraz, buoys will be nearly essential for effectiveness.

3) Other comments:

San Pedro Rock on the San Mateo coast is a seabird breeding and roosting area as well as a haul out site for harbor seals. Although the rock is located outside of the GMP area, at low tide it is accessible from the mainland of the future park addition of San Pedro Point, which is part of the GMP. Therefore, we recommend considering these resources when planning management for this area.

More information about seabird colonies should be included in the Birds section of the draft EIS (Vol II, p 58). Information about the birds using Bird Rock (Marin County), Devil's Slide and San Pedro Rock should be added for a more comprehensive report. We can provide recent information on the status ofseabird breeding populations within the GMP, upon request.

Thank you for the opportunity to provide comments. If you have any questions, please contact me at 510-792-0222, x222.

Sincerely,

Gerry McChesney
Manager, Common Murre Restoration Project

APPENDIX I:
NPS SCENIC EASEMENT ON PENINSULA WATERSHED LANDS[1][2]

GRANT OF SCENIC EASEMENT

This INDENTURE, made this fifteenth day of January, 1969 by and between the City and County of San Francisco, a municipal corporation, Grantor, and The United States of America, Grantee, and with the approval and concurrence of the State of California, acting by and through the Department of Public Works, and the County of San Mateo,

WITNESSETH:

WHEREAS, Public Law 88-29, dated May 28, 1963 (77 Stat. 49, 16 U.S.C., Sec 46OL-1), authorizes the Secretary of the Interior to accept and use donations of property to promote the coordination and development of effective programs relating to outdoor recreation; and

WHEREAS, Grantor is the owner in fee of certain real property, hereinafter described, situate in the County of San Mateo, State of California; and

WHEREAS, said real property is presently under the jurisdiction of the Public Utilities Commission of the City and County of San Francisco and is maintained in substantially its natural state and is devoted to the following use, to wit: the collection, storage and transmission of water and protection of water quality for human consumption, which use is compatible with preserving said land in its present state as open-space land; and

WHEREAS, Grantor desires to preserve said real property in its natural condition to the maximum extent possible consistent with the operations and activities carried on and to be carried on by the Grantor, and to limit the use of said property to the uses to which said property is presently devoted in order to discourage conversion of such land to urban use, recognizing that such land has substantial public value as open-space land and that the preservation of the land in its present open state constitutes an important physical, social, esthetic and economic asset to the City and county of San Francisco, the county of San Mateo, the State of California and The United States of America; and

WHEREAS, a 4.2 mile section of the adopted route for Interstate Route 280, hereinafter called the Junipero Serra Freeway, traverses Grantor's watershed lands south of Ralston Avenue in close proximity to Upper Crystal Springs Reservoir, and Grantor desires and has requested that said section of the Junipero Serra Freeway be relocated at a greater and safer distance from the reservoir along a ridge route in order to provide the greatest possible degree of protection against contamination and pollution of the reservoir and to preserve said real property in its natural condition to the maximum extent possible.

---

[1] The original copies of this easement has not been included due ot the age of the original copy on hand. In order to remain legible, a transcribed version was created, omitting signature pages because they cannot be transcribed. The maps and exhibits associated with this easement have not been included for the same reason.

[2] An original can be requested in person at the following location (as quoted on their website): "To obtain a copy of a previously recorded document please visit our office at *555 County Center, First Floor, Redwood City, CA 94063* and use one of our public terminals for your research. Or, please send a written request with the name(s) of the parties involved, the document type, approximate date of recording along with a preprinted check (payable against a USA bank) to cover the appropriate photocopy fee to the address above." www.smcare.org/recorder/recording_documents/copy_recorded_docs.asp The citations for each easement are at the end of the transcription.

NOW, THEREFORE, for and in consideration of (a) the foregoing; (b) the relocation of the Junipero Serra Freeway generally along the alignment as shown on Exhibit "A," titled "Refined Ridge Route, Interstate Freeway 280, Lands of San Francisco Water Department, December 1968," attached hereto and made a part hereof, which alignment is acceptable to and has been approved by Grantor, or farther to the east of said alignment as may be determined by the California Highway Commission; (c) providing points of access for Panoramic Overlook, Vista Point, West Vista Point, Restoration, Cemetery and Administrative Areas and through access to the College Site, which areas are shown on Exhibit "A"; (d) the substantial additional cost to be incurred by Grantee and the State of California incident to said relocation; (e) the State of California having received assurance from Grantor that the right of way for the aforesaid relocation shall be furnished without cost to the State of California as partial consideration for said relocation; (e) the State of California having received assurance from Grantor that the right of way for the aforesaid relocation shall be furnished without cost to the State of California as partial consideration for said relocation; and (f) Grantor having received assurance by the Grantee, the State of California and the County of San Mateo that the restrictions hereinafter imposed shall have no adverse effect whatsoever upon, and shall not be considered by any court or jury in determining , the fair market value of the lands of Grantor which are presently, or may in the future be, the subject of litigation in eminent domain proceedings brought by the Grantee, the State of California or the County of San Mateo, including but not limited to proceedings now pending before the Superior Court of the State of California, in and for the County of San Mateo in Action Nos. 112271, 113072, 113136, 113137, 113798 and 120527 thereof, the Grantor does hereby grant and convey in perpetuity unto The United States of America, an estate, interest, and scenic easement in said real property of the Grantor, of the nature and character and to the extent hereinafter expressed to be and to constitute a servitude upon said real property of the Grantor, which estate, interest, scenic easement and servitude will result from the covenants and restrictions set out below and hereby imposed upon the use of said property of said Grantor, and to that end and for the purpose of accomplishing the intent of the parties hereto said Grantor covenants on behalf of itself, its successors and assigns with The United States Of America, to do and refrain from doing, severally and collectively, upon the Grantor's said property the various acts hereinafter mentioned, it being hereby agreed and expressed that the doing and refraining from said acts, and each thereof, upon said property is and will be for the benefit of the people of the City and County of San Francisco, the County of San Mateo, the State of California and The United States of America and will help preserve the scenic and natural resources of the area in which said real property is located.

1. The restrictions herby imposed upon the use of said property of the Grantor and the acts which said Grantor so covenants to do and refrain from doing upon its said property in connection therewith are and shall be as follows: The land shall be preserved in its present natural state and shall not be used for any purpose other than for the collection, storage and transmission of water and protection of water quality, and other purposes, which shall be compatible with said use and preserving said land as open-space land.

2. No structures shall be erected upon said land except such structures as maybe directly related to and compatible with the aforesaid uses. No trailer shall be placed, used or maintained on said land as a substitute for a caretaker's residential building. The design and location of all buildings, except water utilities buildings and appurtenances, shat be subject to the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

3. No dump of ashes, trash or any unsightly offensive material shall be placed upon the land, except that in eroding areas of a drainage system where water runoff is destroying the natural ground cover suitable heavy fill or drainage emplacements may be installed to control and prevent further erosion.

4. No signs, billboards or advertisements, excepting directional signs and identification signs in connection with permitted uses, shall be displayed or placed upon the land.

5. Except as to encroachments presently permitted and renewals thereof, Grantor shall not permit further encroachments of any kind or nature upon said property by any adjoining property owner for the sole benefit of said adjoining land either by way of license, permit, easement or otherwise, except as authorized by a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

6. (a) Except as required to accomplish the improvements hereinafter permitted or as otherwise permitted to the Grantor hereunder, the general topography of the landscape shall be maintained in its present condition and no substantial excavation or topographic changes shall be made without the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

7. (b) Nothing in this Indenture shall restrict or affect the authority of the State of California to acquire rights of way for, or to construct, highways on State Routes 92, 186/35, and 186.

8. Except as required to accomplish the purposes and uses herein permitted to Grantor there shall be no cutting or permitting of cutting, destroying or removing any timber or brush without the concurrence in writing by a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

9. Concurrence in a requested action shall be deemed to have been granted if a regional representative of the Department of the Interior has not responded to a request within sixty days.

The foregoing grant and restrictions are made in consideration of and accepted subject to the express condition that the California Highway Commission shall have adopted that portion of the route for the Junipero Serra Freeway traversing lands of the Grantor south of Ralston Avenue hereinbefore provided in subparagraph (b) on pages 2 and 3 hereof. The foregoing grant and restrictions are made and accepted subject to the further following conditions, exceptions and reservations:

a. The Grantor for itself, its representatives and its successors, assigns and permittees reserves all of their rights not specifically restricted herein, including without limitation the perpetual right to use the below-described premises for purposes which they may find necessary or desirable for water or other utility operations as now or hereafter conducted, including without limiting the generality of the foregoing the right to construct maintain, repair, expand and reconstruct buildings (including caretakers' cottages), storage facilities, reservoirs, pipe systems, cable systems, flumes, head walls, retention walls, bulkheads, cofferdams, pumphouses, dikes, roadways, utilities and similar improvements upon the below-described premises.

b. Nothing herein shall be deemed to nullify, supersede or affect any unrecorded lien, encumbrance, rights or other interest in the lands described herein which was in existence at the

time of the recordation of this instrument. The Grantor represents and warrants that all of the uses or activities permitted by any of the aforesaid unrecorded liens, encumbrances, rights or other interests in these lands are compatible with the provisions of this Indenture.

c. The grant herein contained does not in any way and shall not be construed to grant to the public any right to enter the premises for any purpose.

d. The land of the Grantor, hereinabove referred to and to which provisions of this instrument apply, is bounded and described in Exhibit "B" and is shown on the map marked Exhibit "C", each of which exhibits is attached hereto and made a part hereof, to have and to hold unto The United States of America and its assigns in perpetuity. The covenants agreed to and the restrictions imposed, as aforesaid, shall be binding upon the Grantor, its successors, and assigns, and each of them, and shall constitute servitude upon the above-described lands.

All amendments to this Indenture shall be agreed to by the Grantor and Grantee and approved by the State of California and the County of San Mateo.

IN WITNESS WHEREOF, the Grantor has hereunto set its hand and seal on the day and year first above written.

*Note: Signature pages not included. They are available in hard copy at the County of San Mateo's Recorder's Office. Reference: Vol. 5633 Page 466. Recorded on May 2, 1969, 2:48pm by Marvin Church.

APPENDIX J:[34]
NPS SCENIC AND RECREATION EASEMENT ON PENINSULA WATERSHED LANDS

GRANT OF SCENIC AND RECREATION EASEMENT

THIS INDENTURE, made this fifteenth day of January, 1969, by and between the City and County of San Francisco, a municipal corporation, Grantor, and The United States of America, Grantee, and with the approval and concurrence of the State of California, action by and through the Department of Public Works, and the County of San Mateo,

WITNESSETH:

WHEREAS, Public Law 88-29, dated May 28, 1963 (77 Stat. 49, 16 U.S.C., Sec 460L-1), authorizes the Secretary of the Interior to accept and use donations of property to promote the coordination and development of effective programs relating to outdoor recreation; and

WHEREAS, Grantor is the owner in fee of certain real property, hereinafter described, situate in the County of San Mateo, State of California; and

WHEREAS, said real property is presently under the jurisdiction of the Public Utilities Commission of the City and County of San Francisco and is maintained in substantially its natural state and is devoted to the following uses, to wit: the collection, storage and transmission of water and protection of water quality for human consumption; outdoor recreation; and other uses, all of which shall be compatible with preserving said land in its present state as open-space land for public use and enjoyment ; and

WHEREAS, Grantor desires to preserve said real property in its natural condition to the maximum extent possible consistent with the operations and activities carried on and to be carried on by the Grantor, and to limit the use of said property to the uses to which said property is presently devoted in order to discourage conversion of such land to urban use, recognizing that such land has substantial public value as open-space land and that the preservation of the land in its present open state constitutes an important physical, social, esthetic and economic asset to the City and County of San Francisco, the county of San Mateo, the State of California and The United States of America; and

WHEREAS, a 4.2 mile section of the adopted route for Interstate Route 280, hereinafter called the Junipero Serra Freeway, traverses Grantor's watershed lands south of Ralston Avenue in close proximity to Upper Crystal Springs Reservoir, and Grantor desires and has requested that said section of the Junipero Serra Freeway be relocated at a greater and safer distance from the reservoir

[3] The original copies of these two easements have not been included due to the age of the original copy on hand. In order to remain legible, a transcribed copy was created, omitting signature pages since they cannot be transcribed. The maps and exhibits associated with these easements have also not been included for the same reasons.

[4] An original can be requested in person at the following location (as quoted on their website): "To obtain a copy of a previously recorded document please visit our office at *555 County Center, First Floor, Redwood City, CA 94063* and use one of our public terminals for your research. Or, please send a written request with the name(s) of the parties involved, the document type, approximate date of recording along with a preprinted check (payable against a USA bank) to cover the appropriate photocopy fee to the address above." www.smcare.org/recorder/recording_documents/copy_recorded_docs.asp The citations for each easement are at the end of the transcription.

along a ridge route in order to provide the greatest possible degree of protection against contamination and pollution of the reservoir and to preserve the real property in its natural condition to the maximum extent possible.

NOW, THEREFORE, for and in consideration of (a) the foregoing; (b) the relocation of the Junipero Serra Freeway generally along the alignment as shown on Exhibit "A" , titled "Refined Ridge Route, Interstate Freeway 280, Lands of San Francisco Water Department, December 1968", attached hereto and made a part hereof, which alignment is acceptable to and has been approved by Grantor, or farther to the east of said alignment as may be determined by the California Highway Commission; (c) providing points of access for Panoramic Overlook, Vista Point, West Vista Point, Recreation, Cemetery and Administrative Areas and through access to the College Site, which areas are shown on Exhibit "A"; (d) the substantial additional cost to be incurred by Grantee and the State of California incident to said relocation; (e) the State of California having received assurance from Grantor that the right of way for the aforesaid relocation shall be furnished without cost to the State of California as partial consideration for said relocation; and (f) Grantor having received assurance by the Grantee, the State of California, and the County of San Mateo that the restrictions hereinafter imposed shall have no adverse effect whatsoever upon, and shall not be considered by any court or jury in determining, the fair market value of the lands of Grantor which are presently, or may in the future be, the subject of litigation in eminent domain proceedings brought by the Grantee, the State of California or the County of San Mateo, including but not limited to proceedings now pending before the Superior Court of the State of California in and for the county of San Mateo in Action Nos. 112271, 113072, 113136, 113137, 113798 and 120527 thereof, the Grantor does hereby grant and convey in perpetuity unto The United States of America, an estate, interest and scenic and recreation easement in said real property of the Grantor, of the nature and character and to the extent hereinafter expressed to be and to constitute a servitude upon said real property of the Grantor, which estate, interest, scenic and recreation easement and servitude will result from the covenants and restrictions set out below and hereby imposed upon the use of said property of said Grantor, and to that end and for the purpose of accomplishing the intent of the parties hereto said Grantor covenants on behalf of itself, its successors and assigns with the United States of America, to do and refrain from doing, severally and collectively, upon the Grantor's said property the various acts hereinafter mentioned, it being hereby agree and expressed that the doing and refraining from said acts, and each thereof, upon said property is and will be for the benefit of the people of the City and County of San Francisco, the County of San Mateo, the State of California and The United States of America and will help preserve the scenic and natural resources of the area in which said real property is located.

The restrictions herby imposed upon the use of said property of the Grantor and the acts which said Grantor so covenants to do and refrain from doing upon its said property in connection therewith are and shall be as follows:

1. The land shall be preserved in its present natural state and shall not be used for any purpose other than for the collection, storage and transmission of water and protection of water quality; outdoor recreation; ecological preservation and other purposes, which shall be compatible with preserving said land as open-space land for public use and enjoyment.

2. Recreational uses shall be compatible with "Preservation and Recreation Concepts, Peninsula Watershed Lands, San Francisco Water Department, March 1968" a copy of which is marked Exhibit "B", attached hereto and made a part hereof. No structures shall be erected upon said land except such structures as may be directly related to and compatible with the aforesaid uses. No trailer shall hereafter be placed, used or maintained on said land as a substitute for a caretaker's residential building. The design and location of all buildings, except water utilities buildings and

appurtenances, shall be subject to the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

3. No dump of ashes, trash or any unsightly offensive material shall be placed upon the land except that in eroding areas of a drainage system where water runoff is destroying the natural ground cover suitable heavy fill or drainage emplacements maybe installed to control and prevent further erosion.

4. No signs, billboards or advertisements, excepting directional signs and identification signs in connection with permitted uses, shall be displayed or placed upon the land.

5. Except as to encroachments presently permitted and renewals thereof, Grantor shall not permit further encroachments of any kind or nature upon said property by any adjoining property owner for the sole benefit of said adjoining land either by way of license, permit, easement or otherwise, unless authorized by a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

6. (a) Except as required to accomplish the improvements hereinafter permitted or as otherwise permitted to the Grantor hereunder, the general topography of the landscape shall be maintained in its present condition and no substantial excavation or topographic changes shall be made without the concurrence of a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

(b) Nothing is this Indenture shall restrict or affect the authority of the State of California to acquire rights of way for, or to construct, highways or State Routes 92, 186/35, 186 and 280 south of Ralston Avenue.

7. Except as required to accomplish the purposes and uses herein permitted to Grantor there shall be no cutting or permitting of cutting, destroying or removing any timber or brush without the concurrence in writing by a regional representative of the Department of the Interior to be designated by the Secretary of the Interior.

8. Concurrence in a requested action shall be deemed to have been granted if a regional representative of the Department of the Interior has not responded to a request within sixty days.

The foregoing grant and restrictions are made in consideration of and accepted subject to the express condition that the California Highway Commission shall have adopted that portion of the route for the Junipero Serra Freeway traversing lands of the Grantor south of Ralston Avenue as hereinbefore provided in subparagraph (b) on pages 2 and 3 hereof. The foregoing grant and restrictions are made and accepted subject to the further following conditions, exceptions and reservations:

a. The Grantor for itself, its representatives and its successors, assigns and permittees reserves all of their rights not specifically restricted herein, including without limitation the perpetual right to use the below-described premises for purposes which they may find necessary or desirable for their water or other utility operations as now or hereafter conducted, including without limiting the generality of the foregoing the right to construct, maintain, repair, expand and reconstruct buildings (including caretakers' cottages), storage facilities, reservoirs, pipe systems, cable systems, flumes, head walls, retention walls, bulkheads, cofferdams, pumphouses, dikes, roadways, public utilities and similar improvements upon the below-described premises.

b. Nothing herein shall be deemed to nullify supersede or affect any unrecorded lien, encumbrance, rights or other interest in the lands described herein which was in

existence at the time of the recordation of this instrument. The Grantor represents and warrants that all of the uses or activities permitted by any of the aforesaid unrecorded liens, encumbrances, rights or other interests in these lands are compatible with the provisions of this Indenture.

c. The general public shall have the right, subject to rules and regulations as may be imposed and be published by Grantor, to enter the premises for recreational purposes.

d. The land of the Grantor, hereinabove referred to and to which provisions of this instrument apply, is bounded and described in Exhibit "C" and is shown on the map marked Exhibit "D," each of which exhibits is attached hereto and made a part hereof, to have and to hold unto The United States of America and its assigns in perpetuity. The covenants agreed to and the restrictions imposed, as aforesaid, shall be binding upon the Grantor, its successors, and assigns, and each of them, and shall constitute a servitude upon the above-described lands.

e.

All amendments to this Indenture shall be agreed to by the Grantor and Grantee and approved by the State of California and the County of San Mateo.

IN WITNESS WHEREOF, the Grantor has hereunto set its hand and seal on the day and year first above written.

*Note: Signature pages not included. They are available in hard copy at the County of San Mateo's Recorder's Office. Reference: Vol. 5633 Page 387. Recorded on May 2, 1969, 2:48pm by Marvin Church.

APPENDIX K:
STATEMENT OF FINDINGS
FOR EXECUTIVE ORDER 11988, "FLOODPLAIN MANAGEMENT"

DRAFT
Statement of Findings
for
Executive Order 11988, "Floodplain Management"

Golden Gate National Recreation Area
Muir Woods National Monument

2014 General Management Plan

Recommended: _____

Superintendent, Golden Gate National Recreation Area — Date

Concurred: _____

Chief, Water Resources Division — Date

Concurred: _____

Regional Safety Officer — Date

Approved: _____

Director, Pacific West Region — Date

CONTENTS

INTRODUCTION

In accordance with Executive Order 11988, "Floodplain Management" and National Park Service (NPS) guidelines for implementing the order, the National Park Service has reviewed the flood and tsunami hazards in the Golden Gate National Recreation Area (Golden Gate NRA or park) and Muir Woods National Monument (Muir Woods)[1] and has prepared this statement of findings (SOF). The geographic scope of this statement of findings is limited to the planning area for the 2013 General Management Plan / Environmental Impact Statement (GMP/EIS), which excludes some coastal park properties where there may be additional resources and visitor use areas at risk.

By examining the locations of structures, operations, and major visitor use areas, the sites listed below were identified as having park facilities and/or visitor amenities within a regulatory 100-year floodplain mapped by the Federal Emergency Management Agency (FEMA) and/or a tsunami inundation zone (FEMA 2011; California Emergency Management Agency 2009).

MARIN COUNTY

1. **Stinson Beach:** Tsunami hazard generally west of Highway 1 and flood hazard in areas adjacent to Easkoot Creek

    - Facilities: Heavily visited beach, a small entrance booth, two paved parking lots (approximately 3 acres total), an unpaved overflow parking lot, a picnic area, three restroom structures, a snack bar building with lifeguard office, three staff quarters for essential occupancy, three maintenance shops, and a maintenance yard

2. **Muir Beach:** Tsunami hazard generally southwest of Highway 1 and flood hazard in areas adjacent to Redwood Creek

    - Facilities: Heavily visited beach, a large parking lot (165 cars), a restroom building, a picnic area, and a 235-foot-long elevated pedestrian bridge

3. **Muir Woods:** Flood hazard in areas adjacent to Redwood Creek

    - Facilities: A visitor center, restroom structure, and two parking areas

4. **Fort Cronkhite and Rodeo Beach:** Tsunami hazard generally west of Bunker/Mitchell Road

    - Facilities: Heavily visited beach, at least five wood-frame structures, a section of Mitchell Road and associated roadside parking, a vehicular bridge, a pedestrian bridge, and a 40-car parking area

[1] Golden Gate NRA and Muir Woods National Monument are collectively referred to as the Golden Gate NRA throughout this report.

5. **Fort Baker:** Tsunami hazard in Horseshoe Cove

    - Facilities: Several wood-frame structures, access roads, boat docks, slips, and piers

SAN FRANCISCO COUNTY

6. **China Beach:** Tsunami hazard generally west of Sea Cliff Avenue

    - Facilities: A small recreational beach, concrete bathhouse, and service road

7. **Ocean Beach:** Tsunami hazard generally west of Great Highway

    - Facilities: A 4-mile-long recreational beach, three concrete seawalls, restroom, and parking lot complex at Sloat Avenue

8. **Fort Funston:** Tsunami hazard on narrow beach backed by 200-foot bluffs

    - A recreational beach (no facilities)

SAN MATEO COUNTY

9. **Rancho Corral de Tierra:** Flood hazard in areas adjacent to San Vicente Creek

    - Structures: two equestrian boarding facilities

This statement of findings focuses on evaluating the flood and tsunami hazards for the nine aforementioned sites in the 100-year floodplain and tsunami inundation zone. As part of the effort to develop a general management plan for Golden Gate NRA, the statement of findings describes the flood and tsunami hazard, alternatives, and possible mitigation measures for the continued use of these sites. Additional detail regarding lands and resources, future actions to be taken in the area, and environmental impacts may be found in the General Management Plan / Environmental Impact Statement.

The analysis focuses on major structures and heavily visited areas in the General Management Plan / Environmental Impact Statement that fall within either the 100-year regulatory floodplain and/or tsunami inundation zone. Other areas of Golden Gate NRA are subject to occasional flooding due to seasonal high water levels. However, flooding in these areas does not pose a threat to human life, structures, or contribute to the degradation of natural floodplain values.

DESCRIPTION OF THE SITES AND USES

STINSON BEACH

Stinson Beach is a popular recreational beach southeast of Bolinas Lagoon. The beach and adjacent community (also known as Stinson Beach) lie on a narrow strip of land at the base of the coastal hills along the Pacific Ocean. Easkoot Creek—a small perennial stream that drains a watershed of 1,062 acres—passes through the site and empties into Bolinas Lagoon, an ecologically important tidal area.

The tsunami inundation zone and 100-year floodplain encompass the majority of the site. NPS facilities in these zones include an access road and vehicular bridge over Easkoot Creek, a small entrance booth, two paved parking lots (approximately 3 acres total), an unpaved overflow parking lot, a picnic area, three restroom structures, a snack bar building with lifeguard office, three staff quarters for essential occupancy, three maintenance shops, and a maintenance yard. The developed area that contains most of these facilities is on the back side of the primary sand dune along the beach. Portions of the developed area are immediately adjacent to Easkoot Creek.

MUIR BEACH

Muir Beach is a small, popular recreational beach along the Pacific Ocean at the base of the hillside community of Muir Beach. Redwood Creek—a perennial stream that drains a watershed of approximately 9 square miles—flows into the Pacific Ocean at the site. Muir Beach also has a trailhead with trails leading to Tennessee Valley, Muir Wood, and Mount Tamalpais.

Muir Beach facilities include a large parking lot (165 cars), portable restrooms, a picnic area, and a new 235-foot-long elevated pedestrian bridge over Redwood Creek that provides access from the parking area onto the beach. The parking lot, restrooms, and picnic area will be replaced in August 2013 in sites above the Redwood Creek floodplain. The pedestrian bridge was begun in 2011 and will remain above the floodplain. However, the recreational beach is within the 100-year floodplain for the creek. All of these facilities and beach recreation areas, including the Marin County road that provides access to the site and the Pacific Way Bridge, are within the tsunami inundation zone.

MUIR WOODS

Muir Woods is located in the geographic center of the Redwood Creek watershed, which encompasses about nine square miles from Mount Tamalpais to the Pacific Ocean at Muir Beach. Ninety-five percent of the watershed is publicly owned, although it's managed by a number of different local, state, and federal land management agencies. Approximately 2 miles of Redwood Creek passes through Muir Woods. There is no tsunami risk at this inland site.

The location and extent of the 100-year floodplain have not been identified by FEMA or the National Park Service for Golden Gate NRA. However, according to FEMA data, much of the property along Redwood Creek is in "an area of undetermined but possible flood hazards." A number of facilities and structures are presumed to be in or adjacent to the floodplain including portions of the Ben Johnson Trail, which parallels the creek, a small visitor center, a restroom building, and two parking areas (the 30-car main lot and 115-car annex).

FORT CRONKHITE AND RODEO BEACH

Fort Cronkhite is a former World War II military post of about 50 structures along Rodeo Lagoon in the Marin Headlands. The barracks, mess halls, supply buildings, and other structures are preserved and currently house numerous facilities used by Golden Gate NRA partners and the National Park Service. Partner facilities at Fort Cronkhite include the Golden Gate Raptor Observatory, Marine Mammal Center, and an educational facility operated by NatureBridge. Rodeo Beach is a popular recreational beach along the Pacific Ocean just west of Fort Cronkhite.

Rodeo Beach and Rodeo Lagoon, and their associated recreational uses, are within the tsunami inundation zone. However, most Fort Cronkhite structures are above the tsunami zone. The Fort Cronkhite facilities within the zone include a segment of Mitchell Road with visitor parking (40 cars), a segment of Bunker Road including a roadway bridge at the upper end of the lagoon, a restroom and portion of a paved parking lot, a steel pedestrian bridge, a lift station for the sanitary sewer, and at least five historic buildings. More precise mapping of the 100-year floodplain may identify other structures at risk.

FORT BAKER

Fort Baker is a 335-acre former U.S. Army post immediately northeast of the Golden Gate Bridge on San Francisco Bay. The 100-year floodplain has not been identified for this area by FEMA or the National Park Service. For purposes of this analysis, the floodplain is considered as coterminous with the tsunami inundation zone. Facilities in the tsunami zone include several wood-frame structures, access roads, boat docks, slips, and piers in and around Horseshoe Cove.

CHINA BEACH

China Beach is a small recreational beach in a cove between Baker Beach and Land's End. The sand beach, a bathhouse, and a service road are within the tsunami inundation zone. The parking area for the beach is situated on high ground above the cove, and public beach access is via a service road and stairway from the parking lot. Swimming is discouraged due to unpredictable surf conditions, but the beach is popular for fishing and sunbathing.

OCEAN BEACH

Ocean Beach is a heavily visited recreational beach that stretches for 4 miles from Cliff House to Fort Funston. Beach visitors are recreating in the tsunami inundation zone. The parking areas for the beach are on higher ground slightly above the beach and are owned by the City of San Francisco, except for the Sloat Avenue facilities, which are owned by the National Park Service. The NPS property within the tsunami inundation zone at Ocean Beach includes three sections of concrete seawall behind portions of the beach and a restroom and parking lot complex at Sloat Avenue. The vast majority of the NPS property used for recreation consists of sand beach and dune fields.

FORT FUNSTON

Fort Funston includes a heavily visited recreational beach. The beach is narrow in width and is backed by bluffs ranging in height from 50 to 200 feet. Beach visitors are recreating in the tsunami inundation zone. Park facilities are on the bluffs above the beach. Public beach access is via unpaved trails from a parking area. Several structures are in the upper area (atop the bluffs), including a parking lot, restrooms, maintenance facility, a native plant nursery, and buildings used for educational programs offered by a park partner. There are no facilities in the 100-year floodplain or tsunami zone at Fort Funston.

RANCHO CORRAL DE TIERRA

The Rancho Corral De Tierra property was transferred to Golden Gate NRA in 2011 and baseline information is still being developed for the area. The property managed by the NPS is approximately 3,900 acres in size and is largely undeveloped. The property encompasses rugged hills with elevations up to approximately 1,800 feet. The terrain is composed of coastal shrub and coastal chaparral habitat. The area's recreational trail network makes it a popular destination for equestrians and hikers. None of this property is within the tsunami inundation zone.

Two large equestrian boarding facilities (Moss Beach Ranch and Ember Ridge, approximately 160 horses combined) with stables, paddocks, and other supporting structures are alongside San Vicente Creek. These facilities are operated by a private concessioner. Measured data is not available for the creek, but periodic flooding of San Vicente Creek could affect some or all of these equestrian facilities and put park visitors at risk.

JUSTIFICATION FOR USE OF THE FLOODPLAIN / TSUNAMI INUNDATION ZONE

DESCRIPTION OF PREFERRED ALTERNATIVE AND WHY FACILITIES WOULD BE RETAINED IN THE FLOODPLAIN / TSUNAMI INUNDATION ZONE

Under the preferred alternative in the general management plan, park facilities at each of the nine park sites would be retained at their existing locations. The rationale behind retaining these structures in their existing locations in the 100-year floodplain and/or tsunami inundation zone is based on the following general rationales:

- Most of the structures were stable and usable when the National Park Service assumed management and ownership of these sites, and some structures contribute to the list of park resources in the National Register of Historic Places.
- The ocean beaches have a long history as popular recreational destinations among the population of the Bay Area.
- The National Park Service has no records of past flooding effecting occupied structures at any of these sites.
- Relocating the facilities and services at these sites may be infeasible and very costly from both a financial cost perspective and from a quality of service perspective.
- The structures at these sites are already on disturbed ground. Moving the facilities would likely result in adverse impacts and the loss of other natural resource values (possibly including endangered species) in the area.
- Many of the structures at these sites are connected to the municipal sewer and water utility systems, which avoids the need for individual septic and well systems and the resource impacts they would bring.
- The sites have direct access to roadways and trails that provide quick evacuation routes to higher, inland areas.

A more detailed justification for the use of the facilities at each respective site follows. The site-specific descriptions also include a brief summary of the analysis of alternative locations conducted during development of the general management plan and previous planning efforts. During alternative development for this general management plan, sea level rise, tsunami, and flood risks were considerations. Site-specific implementation planning and renovations of existing structures will consider flood and tsunami hazards and potential mitigation measures in more detail.

STINSON BEACH

- Stinson is the park's only swimming beach in Marin County and accounts for over 800,000 visitors annually.
- The site came to the National Park Service by transfer from the State of California upon establishment of Golden Gate NRA in 1972 and already had a long history as a recreational destination.

- There are very few alternatives to relocating facilities because the site is bounded by residential development.
- Maintenance facilities are required in this area due to the long distances between Stinson Beach and other park maintenance facilities.

MUIR BEACH

- Muir Beach is a popular recreational site and accounts for over 350,000 visitors annually.
- The site came to the National Park Service by transfer from the State of California upon establishment of Golden Gate NRA in 1972 and already had a long history as a recreational destination.
- The facilities required to support a recreational beach have been designed and are being constructed to avoid damage in the event of a 100-year flood as defined in the Big Lagoon environmental impact statement.
- Alternative sites for facilities were evaluated in the Big Lagoon environmental impact statement.

MUIR WOODS

- The national monument was established under the Antiquities Act in 1908 and was already a popular recreational area at that time. The inspirational qualities of the old-growth redwood forest and its proximity to San Francisco make it one of the most popular park sites, accounting for almost 900,000 visitors in 2012.
- Many existing facilities are contributing resources to this national register property. Removing certain features could adversely affect its historic integrity.
- Detailed site planning studies currently in progress indicate that there are very few opportunities to relocate essential facilities out of the floodplain due to other physical and environmental constraints.
- The trails along Redwood Creek provide unique opportunities for interpreting the history of the site such as the United Nations ceremony for President Franklin D. Roosevelt held in Cathedral Grove in 1945. Visitors using the trails also have immediate access to high ground due to branching trails that climb the steep valley slopes in the area.

The preferred alternative in the general management plan proposes several actions that could improve the hydrologic processes and floodplain function of Redwood Creek. Specifically, the preferred alternative for Muir Woods proposes redesigning the arrival area and reconfiguring the remaining parking lots to better accommodate the park shuttle and commercial buses. The redesigned site would likely reduce the need for additional on-site parking to accommodate individual cars. This could also include the removal of some asphalt surfaces and replacement with a more pervious surface, which could decrease flood risk by allowing better filtration of precipitation. Portions of trails could be relocated to allow creek and floodplain restoration as well. Targeted removal of riprap would be pursued to improve the natural hydrologic processes and floodplain function of Redwood Creek. The existing visitor center would be retained at its current location.

However, the existing restroom is proposed for demolition, and its replacement would be constructed at a more suitable site farther from the creek.

A sophisticated system is currently under development to manage visitor access by employing reservations for parking and remote parking areas and shuttle buses to reduce the need for additional facilities in the floodplain.

FORT CRONKHITE AND RODEO BEACH

- Fort Cronkhite is a major center for park staff and programs run by Golden Gate NRA partners. Along with Rodeo Beach, the park accounts for over 4.5 million visitors to the Marin Headlands annually.
- Fort Cronkhite is listed in the national register. Most of the structures within the floodplain and tsunami zone have been identified as contributing resources.
- Rodeo Beach provides convenient public access to the Pacific Ocean and has historically been a popular beach.

FORT BAKER

- This site is listed in the national register with most of the structures identified as contributing resources. Thus, relocating or removing them is not consistent with the purpose of preserving such resources.
- Planning for this area was completed in the 2000 Fort Baker Plan / Environmental Impact Statement. The general management plan does not propose changes to the plan except for management of offshore areas.

CHINA BEACH

- The site is potentially eligible for listing in the national register for its architecture and design as an early post–World War II civic recreational complex. Thus, relocating or removing site features is not consistent with the purpose of preserving such resources.
- This park unit comprises a small, narrow strip of coastal land and is closely bounded by urban areas on three sides. Therefore, there are few feasible options to relocate the facilities.

OCEAN BEACH

- The long, narrow beach is closely bordered by a major road (the Great Highway), dense residential neighborhoods, and is among one of the most heavily visited park units (3.5 million visitors in 2011).
- The beach is the primary ocean and beach access point for San Francisco residents because of its proximity to the city and the direct access from multiple transportation modes.
- Ocean Beach is within the coverage of the San Francisco tsunami outdoor warning system.

A recent multiagency planning effort analyzed the potential impacts to the Ocean Beach corridor due to climate change and developed a series of adaptations for further study and implementation (Ocean Beach Master Plan, SPUR 2012).

The master plan recommended retention of the O'Shaughnessy Seawall, which is potentially eligible for listing in the national register; and relocation of the NPS parking and restroom facilities at Sloat Avenue. The park is participating in implementation planning for these actions as part of the GMP preferred alternative.

FORT FUNSTON

- There are no facilities within the tsunami inundation zone or 100-year floodplain, and the general management plan and draft dog management plan do not propose to develop any facilities at the beach.
- The beach and upper bluffs support a high diversity of recreational activities, including hiking, dog walking, hang-gliding, and horseback riding.

RANCHO CORRAL DE TIERRA

- The general management plan considered other alternatives, such as removal of the equestrian facilities, but these were not selected because they did not meet park management objectives and adequately support park enabling legislation.

DESCRIPTION OF SITE-SPECIFIC FLOOD AND TSUNAMI RISK

The information presented below is a general characterization of the site-specific flood and tsunami risks. This information is followed by an individual analysis of the nine sites. Golden Gate NRA has produced geographic information system (GIS) maps for seven of the sites, which show the extent of the flood and tsunami risk in more detail—these maps are included in the supplemental section after the report summary. However, measured data of previous large flood and tsunami events at the sites is not available, and existing FEMA data does not provide full coverage of all the sites.

Several park sites have flooding risks associated with overbank flooding of nearby streams and blockage of stream channels caused by urban development. These sites are Stinson Beach (Easkoot Creek), Muir Woods and Muir Beach (Redwood Creek), and Rancho Corral de Tierra (San Vicente Creek). Overbank flooding typically occurs during winter and early spring, when average precipitation rates are highest in the region, strong winter storms bring periods of sustained rainfall, and soils become saturated in low lying areas surrounded by hills and bluffs. By mid to late April, precipitation rates drop off significantly in the region, and the risk of stormwater flooding decreases considerably at all sites until the following winter.

There is a general tsunami risk at nearly all of Golden Gate NRA's coastal park sites. Earthquakes generated in the Cascadia Subduction Zone, off the U.S. west coast, could produce tsunamis where the first waves strike park lands within minutes (near-source tsunami). The size and speed of the wave would depend on the magnitude of the seismic activity. Consequently, near-source tsunamis present one of the biggest risks to Golden Gate NRA visitors, staff, and facilities. Distant-source tsunamis, generated by seismic activity in more distant parts of the Pacific Plate, would allow more extensive warning and evacuation. Estimated time of arrival for a distant-source tsunami would depend mainly on the seismic activity's point of origin. For example, tsunamis produced off the Alaskan coast could reach Golden Gate NRA lands within five hours, while tsunamis produced off the coast of Japan may take between 10 to 12 hours to reach Golden Gate NRA.

STINSON BEACH

Easkoot Creek is subject to overbank flooding due to excessive precipitation. Overbank flooding typically occurs as a result of sustained periods of precipitation during winter and early spring, when precipitation rates are highest and soils become saturated. However, overbank flooding often takes days or even weeks to occur. Wave overwash from the Pacific Ocean occasionally inundates the north parking lot at Stinson Beach during winter storms. The beach itself is subject to heavy surf, but the dune between the beach and the picnic and parking areas provides some protection from heavy surf caused by storms.

The tsunami inundation zone at Stinson Beach involves most of the public areas and NPS facilities. The zone extends generally inland to Shoreline Highway. The maintenance facilities and park residence are just outside the upper edge of the tsunami inundation zone.

MUIR BEACH

Redwood Creek is prone to overbank flooding as a result of periods of heavy, sustained precipitation during the winter and early spring. The beach and dune area at Muir Beach is also subject to heavy surf and wave overwash from ocean storms.

The new structures at Muir Beach are being built above the Redwood Creek floodplain, but portions of the recreational beach could be inundated by overbank flooding. Restoration work at Muir Beach and along the Banducci reach—upstream of the Highway 1 crossing—during the last decade have reconnected the creek to one of its larger floodplain areas, which will serve to reduce the potential for flooding in developed areas in lower portions of the creek.

The tsunami inundation zone at Muir Beach includes all the NPS facilities and the beach itself. A tsunami would inundate low lying areas generally along Redwood Creek all the way up to a point roughly 800 feet northwest of the Golden Gate Diary.

MUIR WOODS

There is no tsunami risk at Muir Woods, but much of the infrastructure is likely within the floodplain of Redwood Creek and its small tributaries. However, there are no park records of flooding of any of the occupied structures at Muir Woods. A heavily used paved trail also runs directly alongside the creek, and large segments of the trail could be inundated by significant overbank flooding.

At Muir Woods, there has long been concern about how park facilities may impact riparian and aquatic habitats, both directly and indirectly. As early as the 1980 general management plan, a priority was placed on reducing such impacts through relocation of facilities. Impervious surfaces, such as the paved trail and parking area, may reduce infiltration of precipitation and increase peak stream flows. Since the 1980s, there has been a substantial reduction in impervious surfaces within Muir Woods due to actions such as conversion of asphalt trails to elevated boardwalks. At present, the park is studying modifications to transportation infrastructure that could further reduce the extent of impervious surfaces.

FORT CRONKHITE AND RODEO BEACH

The small catchment area of the Rodeo Valley watershed, the broad undeveloped upstream floodplain, and the capacity of Rodeo Lagoon all minimize the stream flooding potential at Fort Cronkhite. Undersized or clogged culverts sometimes create localized flooding on Bunker and Mitchell roads.

The tsunami inundation zone entails Rodeo Beach and Lagoon, small segments of Mitchell and Bunker roads, and at least five structures nearest the Lagoon. The cove-like curve of the coast and higher topography at the north and south ends of Rodeo Beach, could amplify the energy of a tsunami wave to a small degree at this site. A significant tsunami wave could inundate all of Rodeo Beach, which rises to approximately 20 feet above sea level and stretches across the entrance to Rodeo Lagoon. In addition, Rodeo Beach is subject to heavy surf and wave overwash during storms.

FORT BAKER

Flood potential caused by precipitation at Fort Baker is generally associated with San Francisco Bay. Stormwater from the site is collected into a subsurface storm drain system and conveyed to the bay. Clogged storm drain inlets and pipes could create localized flooding during heavy storms.

The boat docks, slips, and piers in and around Horseshoe Cove lie within the tsunami inundation zone. However, the Fort Baker site is also within the San Francisco Bay Area. The effects of a tsunami on all coastal sites within San Francisco Bay—defined here as areas east of the Golden Gate Bridge—would likely be reduced due to diffusion of wave energy. The topography and terrain in the immediate area around Horseshoe Cove would likely minimize the property damage associated with a tsunami at this site, e.g., the cove is blocked from the direct energy of a potential tsunami by the bluffs at the north end of Golden Gate Bridge.

CHINA BEACH

China Beach is subject to heavy surf and waves during storms and inundation from tsunamis. The beach itself, which is approximately 70 feet in width and 400 feet long, could be entirely inundated by a relatively small tsunami. However, the concrete bathhouse at the site is situated atop a 12 foot concrete seawall just above the beach. The seawall and bluffs along the coastline west of China Beach could reduce structural damage to the bathhouse by absorbing some of the tsunami's wave energy.

OCEAN BEACH

Ocean Beach is subject to heavy surf and waves during storms. Bluff erosion at the southern end of the beach is commonly associated with winter storms.

This 4-mile stretch of flat recreational beach is directly along the open Pacific coastline and lies almost entirely within the tsunami inundation zone. The tsunami zone in this area extends inland up to 1,000 feet—to approximately 48th Avenue in the city of San Francisco's Sunset District. Sand dunes, which abut the Great Highway on the east side of Ocean Beach, could absorb some of the energy of an incoming wave prior to it reaching the city's residential areas. The north section of the beach, which borders Sutro Heights, is characterized by steep bluffs (up to 50 feet in height) that extend directly into the ocean. The tsunami inundation zone at the northern end of Ocean Beach does not involve park property or facilities.

FORT FUNSTON

The recreational beach at Fort Funston is subject to heavy surf and wave inundation during storms and inundation from tsunamis. High tides can also inundate sections of the beach, which is bordered by bluffs ranging from 50 to 200 feet in height. The bluff edge is subject to failure and erosion caused primarily by winter storms. Park facilities at Fort Funston are in a broad flat area atop the bluffs. The facilities are set well back from the bluff edges and are not at risk of tsunami inundation or significant flooding caused by precipitation.

RANCHO CORRAL DE TIERRA

There is a potential risk of flooding at and around the two equestrian facilities as a result of overbank flooding of San Vicente Creek. The creek is approximately five miles in length and drains a watershed of approximately 1,200 acres. The creek originates near a saddle in the ridgeline southeast of South Peak (elevation 1,830 feet), is fed by several smaller drainages, and trends southwest until it meets the Pacific Ocean near the community of Moss Beach. The soils along the low lying areas of the creek include Holocene alluvial deposits and poorly consolidated sand and gravel.

Measured data is not available for San Vicente Creek, but the creek's relatively small watershed, soil types that tend to drain quickly, and the undeveloped upstream floodplain, likely reduce the risk of flooding at these facilities. Flooding would most likely occur during the winter and early spring, when precipitation rates are highest.

TSUNAMI AND FLOOD MITIGATION MEASURES

The highest level of flood and tsunami hazard mitigation for the structures and visitor use areas at these sites would be relocation of the facilities and/or services out of the floodplain and tsunami inundation zone. This option is not currently feasible and has high costs associated with it. Thus, this option has not been chosen by the National Park Service. In addition, none of the structures that are present in the floodplain or tsunami inundation zone have overnight use—all are day use facilities only. Therefore impacts to human life and safety should be reduced. If or when the structures reach their usable lifespan, or if a future flood or tsunami event results in severe damage, then the National Park Service would assess possibilities for relocating the facilities. The 100-year floodplain and tsunami inundation zone will be considered in the siting decisions for future development projects identified in the general management plan.

Given the proximity of these sites to flood and tsunami risks, the early, prompt, and safe evacuation of people is the primary mitigation measure available to the National Park Service. The National Park Service also has other measures that can be used to mitigate the risks to life and property associated with flooding and tsunamis. First, the preferred alternative for the general management plan includes activities and restoration projects that would improve floodplain function and integrity upstream of many of these sites. Second, no irreplaceable records, archeological artifacts, or museum collections are kept in the subject structures. And third, the National Park Service will continue to regularly remove, or assist other agencies in the removal of, debris that blocks culverts and other drainage structures.

A general emergency response process for tsunami and flood events is described below. Detailed emergency response plans for flood and tsunami events will be developed during future planning efforts.

TSUNAMI ALERT AND RESPONSE PROCEDURES

Alert Procedures

Park police dispatch personnel regularly monitor the California Law Enforcement Telecommunications System (CLETS) and National Warning System (NAWAS) operated by the Federal Emergency Management Agency for tsunami advisories, watches, and warnings. Depending on the level of risk (for example, a tsunami warning), park police dispatch would notify the Golden Gate NRA management team, law enforcement rangers, and park staff who are liaisons to county emergency management agencies. The park staff designed as county-level liaisons would communicate with the appropriate county emergency operations center and relay situational updates as needed. Additional notifications would go out to all park staff and partners if necessary.

Response Procedures

Golden Gate NRA law enforcement rangers (and other supporting personnel) would move to specific areas to coordinate and facilitate the evacuation of visitors and staff. In order of priority, those areas are: (1) beaches, (2) facilities and structures, and (3) coastal trails. In outdoor areas, teams will use public address systems on emergency vehicles to make roving announcements about evacuation routes and emergency assembly areas. Inside facilities, staff will communicate evacuation instructions to visitors verbally and through public address (PA) systems.

A tsunami warning will also trigger San Francisco County's emergency warning system—the Outdoor Public Warning System (OPWS). This system consists of 109 sirens that can also be used to broadcast announcements in coastal and inland areas throughout San Francisco County. These sirens are easily audible from park facilities, beaches, and trails within San Francisco. Marin County also has a working system of warning sirens that are audible at Stinson and Muir beaches.

Multiple evacuation routes are available to staff and visitors at these sites.[2] In a critical tsunami scenario (e.g., a large tsunami is expected to strike in less than an hour following seismic activity), evacuees would be instructed to move uphill by any means available to a point at least 50 feet above sea level. The terrain at Golden Gate NRA coastal areas should provide sufficient opportunities for evacuees to quickly move uphill out of the tsunami inundation zone. General directions for evacuees are presented below for each site in the event of a tsunami warning. The directions are intended to move evacuees to immediate safety and are consistent with the current emergency management plans of local jurisdictions:

- **Stinson Beach:** Move to Highway 1. Move to high ground by traveling south on Highway 1 (note: Bolinas Lagoon sits within the inundation area).
- **Muir Beach:** Move to Highway 1. Travel southeast on Highway 1 to high ground.
- **Fort Cronkhite and Rodeo Beach:** Travel east to Bunker Road, move east on Bunker Road to high ground (note: Rodeo Lagoon sits within the inundation area).
- **China Beach:** Move south/uphill until above El Camino Del Mar Road.
- **Ocean Beach:** Move uphill along major east-west roadways to 45th Street.
- **Fort Funston**: Move uphill to Skyline Boulevard.

FLOOD ALERT AND RESPONSE PROCEDURES

For flood hazards, historic weather patterns and stream responses indicate there would be ample time to warn staff and visitors using the affected facilities at Muir Beach, Muir Woods, Stinson Beach, and Rancho Corral de Tierra, and have them evacuate the area.

The park's response to a flood event created by precipitation would involve a similar process as that outlined for a tsunami event. Park police dispatch would initiate flood alert and response procedures based on an Official Flood Advisory/Warning disseminated by the National Weather Service, or a notification from a county office of emergency management. Park staff would then assume an "alert status" and regularly monitor creek conditions and flows. A park liaison may also be designated to coordinate with county level agencies, should they activate an Emergency Operations Center and establish Incident Command.

Depending on the level of risk, Golden Gate NRA law enforcement rangers and other designated staff would move to pre-emptively evacuate affected areas well ahead of expected flooding, and then prevent further entry into those areas with signage and/or by posting law enforcement staff at strategic points. In the event that flooding occurs with little or no warning, visitors and NPS staff

[2] Golden Gate NRA recently obtained tsunami hazard and evacuation signs for Stinson Beach, Muir Beach, Rodeo Beach, and Kirby Cove. These signs will be installed pending the sign installation approval process.

would be instructed to move to high ground and roadways above low-lying areas by the most expedient means available.

CLIMATE CHANGE

Climate change is expected to create changes in rainfall patterns and intensity, including the frequency of extreme rainfall events that would change the inundation areas for a 100-year flood event. Increased storm intensity, including changes in storm wind patterns, is also expected to affect inundation associated with coastal flooding. Also, sea level rise is expected to continue as the result of climate change, which would compound the effects and reach of tsunamis. These changes will likely require ongoing monitoring of weather patterns, sea level, and creek levels in and around Golden Gate NRA in the future (NPS 2012).

FUTURE PLANNING EFFORTS

The continued use of the aforementioned sites for the various facilities and services would necessitate the development (and future implementation) of a coordinated emergency response plan for Golden Gate NRA. The plan would include strategies for emergency response training for park personnel, interagency coordination procedures, proper storm and tsunami monitoring procedures, emergency communication methods, actions and responsibilities during evacuations of specific sites, and evacuation routes.

Golden Gate NRA will coordinate its future planning efforts with emergency management representatives from Marin County, San Francisco County, San Mateo County, Point Reyes National Seashore, and park partners. In recent years, great strides have been made toward developing collaborative relationships with emergency managers in adjacent jurisdictions. Future planning efforts will continue to approach emergency preparedness and response in a collaborative manner.

SUMMARY

The National Park Service has determined that there is no practicable alternative to maintaining the use of the structures and landscapes at the nine aforementioned sites. This determination is primarily based on: (1) the notable costs and natural resource impacts that would be incurred by moving these facilities to new locations outside the floodplain and tsunami inundation zone, (2) a lack of suitable alternative locations, (3) the historic values associated with many of the structures, and (4) the recreational value of the beaches and their supporting facilities to the general public.

The primary flood and tsunami mitigation measure for the sites is the safe and timely evacuation of visitors and staff from affected areas. To this end, Golden Gate NRA will continue to monitor the NAWAS and CLETS systems for flood and tsunami information and will develop a coordinated evacuation plan for all facilities and visitor areas as resources allow. In addition, the facilities in these areas are day use only. Other mitigation measures include floodplain restoration activities described in the general management plan, the current system of outdoor warning sirens audible in coastal areas, participating in emergency scenario exercises with local jurisdictions, keeping irreplaceable records and items in structures that are not in flood-prone areas, and removing debris that collects on the upstream side of culverts.

For flood hazards associated with heavy precipitation, the National Park Service monitors the NAWAS and CLETS systems. Historic weather patterns indicate there would be ample time to warn staff and visitors using the affected facilities at Stinson Beach, Muir Woods and Beach, and Rancho Corral de Tierra to evacuate the area. Visitors and staff would generally be directed to move uphill and away from low-lying areas, and to then proceed out of the flood-affected site using major roadways.

For tsunami hazards, the National Park Service monitors the NAWAS and CLETS systems. The time available to warn and evacuate visitors and staff would depend on whether the tsunami was near-source generated or distant-source generated. The National Park Service would initiate alert and evacuation procedures for coastal park units based on the level of risk (potential size of tsunami and expected time of arrival). Visitors and staff would generally be directed to move east (uphill) to arterial roadways or terrain at least 50 feet above sea level.

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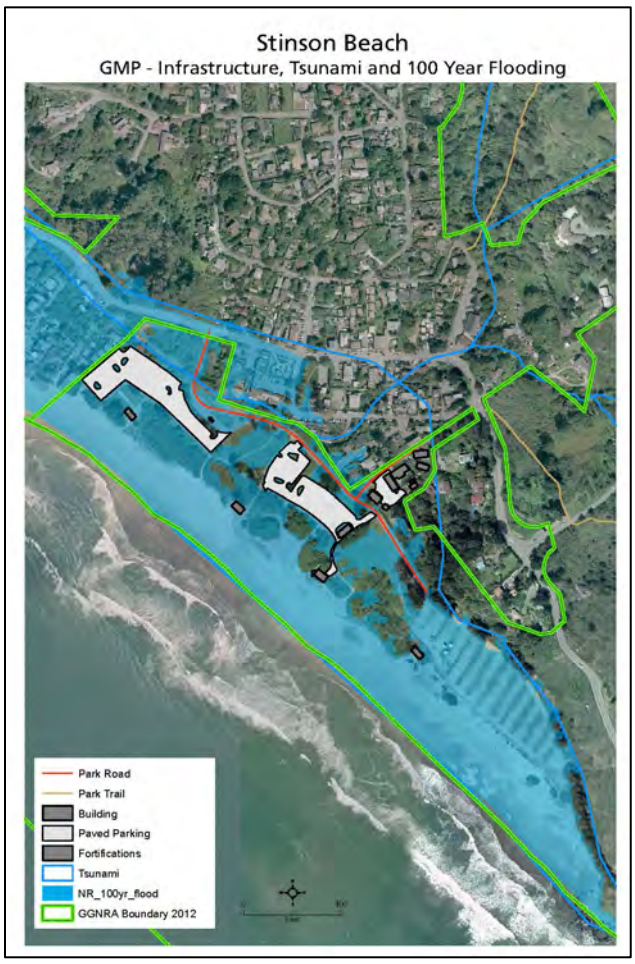
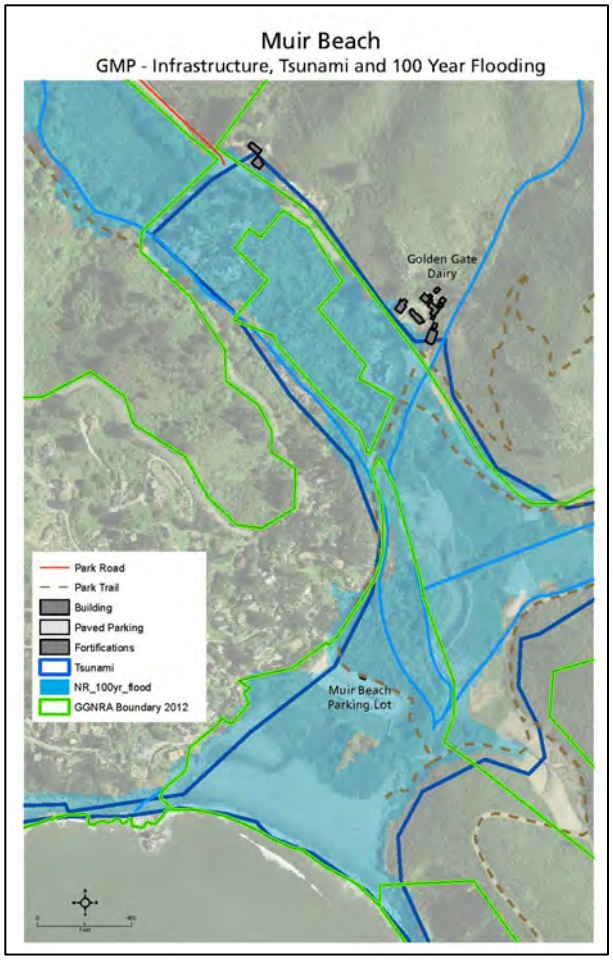
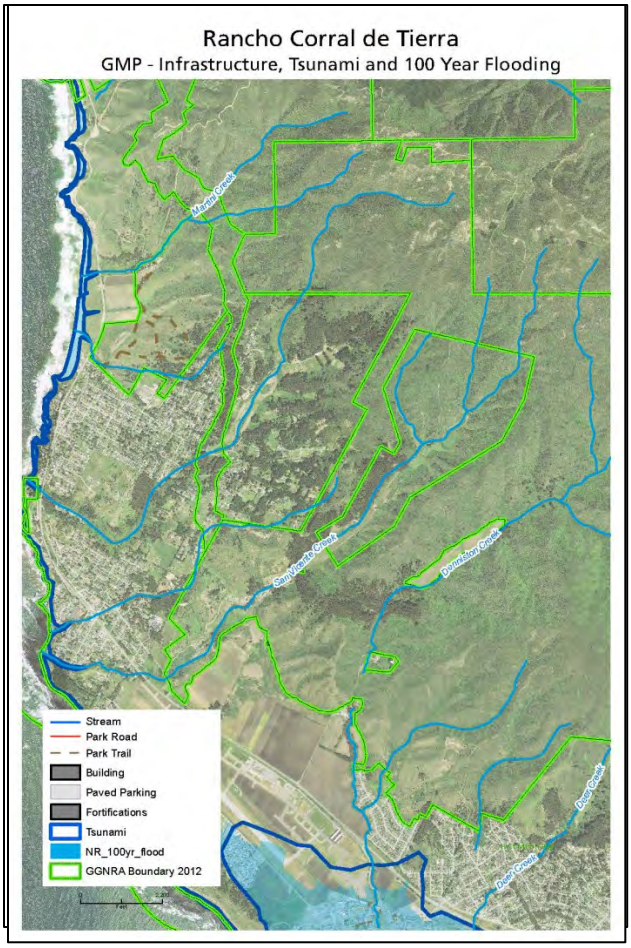





Ocean Beach
GMP - Infrastructure, Tsunami and 100 Year Flooding
Stream
Park Road
Park Trail
Building
Paved Parking
Fortifications
Tsunami
NR_100yr_flood
GGNRA Boundary 2012


Rancho Corral de Tierra
GMP - Infrastructure, Tsunami and 100 Year Flooding
Stream
Park Road
Park Trail
Building
Paved Parking
Fortifications
Tsunami
NR_100yr_flood
GGNRA Boundary 2012


China Beach and Baker Beach
GMP - Infrastructure, Tsunami and 100 Year Flooding
Stream
Park Road
Park Trail
Building
Paved Parking
Fortifications
Tsunami
NR_100yr_flood
GGNRA Boundary 2012

Glossary and References

GLOSSARY

Glossary List	
accessibility	Occurs when individuals with disabilities are able to reach, use, understand, or appreciate NPS programs, facilities, and services, or to enjoy the same benefits that are available to persons without disabilities.
adaptive management	System of management practices based on clearly identified outcomes, monitoring to determine if management actions are meeting outcomes, and, if not, facilitating management changes that will best ensure that outcomes are met or are re-evaluated as conditions change. Adaptive management A recognizes that knowledge about natural resource systems is sometimes uncertain and is the preferred method of management in these cases. (Source: *Departmental Manual 516 DM 4.16*).
American Indian tribe	Any band, nation, or other organized group or community of Indians, including any Alaska Native Village, which is federally recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians.
appropriate use	A use that is suitable, proper, or fitting for a particular park, or to a particular location within a park.
archeology	The scientific study, interpretation, and reconstruction of past human cultures from an anthropological perspective based on the investigation of the surviving physical evidence of human activity and the reconstruction of related past environments. Historic archeology uses historic documents as additional sources of information.
archeological resource	Any material remains or physical evidence of past human life or activities, which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research
asset	A physical structure or grouping of structures, land features, or other tangible property that has a specific service or function.
asset management	A systematic process of maintaining, upgrading, and operating assets cost-effectively by combining engineering principles with sound business practices and economic theory.
backcountry	Primitive, undeveloped portions of parks.
best management practices (***BMPs***)	Practices that apply the most current means and technologies available to not only comply with mandatory environmental regulations, but also maintain a superior level of environmental performance. See also, "sustainable practices/principles."
civic engagement	As a philosophy, a discipline, and a practice, it can be viewed as a continuous, dynamic conversation with the public on many levels that reinforces the commitment of the National Park Service and the public to the preservation of park resources and strengthens understanding of the full meaning and contemporary relevance of these resources. Civic engagement is the philosophy of welcoming people into the parks and building relationships around a shared stewardship mission, whereas public involvement (also called public participation) is the specific, active involvement of the public in NPS planning and other decision-making processes.
conserve	To protect from loss or harm; preserve. Historically, the terms conserve, protect, and preserve have come collectively to embody the fundamental purpose of the National Park Service—preserving, protecting and conserving the national park system.
consultation (***cultural resources***)	A discussion, conference, or forum in which advice or information is sought or given, or information or ideas are exchanged. Consultation generally takes place on an informal basis; formal consultation requirements for compliance with section 106 of the NHPA are published in 36 CFR Part 800. Consultation with recognized tribes is done on a government-to-government basis.

Glossary List	
cultural landscape	A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values. There are four general kinds of cultural landscape, not mutually exclusive: historic site, historic designed landscape, historic vernacular landscape, ethnographic landscape.
cultural resource	An aspect of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register of Historic Places and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for NPS management purposes.
cumulative actions	Actions that, when viewed with other actions in the past, the present, or the reasonably foreseeable future regardless of who has undertaken or will undertake them, have an additive impact on the resource the proposal would affect.
decision maker	The managerial-level employee who has been delegated authority to make decisions or to otherwise take an action that would affect park resources or values. Most often it refers to the park superintendent or regional director, but may at times include, for example, a resource manager, facility manager, or chief ranger to whom authority has been redelegated.
deferred maintenance	Maintenance that was not performed when it should have been, and therefore, is delayed. Continued deferment of maintenance results in deficiencies. Deferred maintenance is the cost to repair an asset's deficiencies.
desired condition	A park's natural and cultural resource conditions that the National Park Service aspires to achieve and maintain over time, and the conditions necessary for visitors to understand, enjoy, and appreciate those resources.
developed area	An area managed to provide and maintain facilities (e.g., roads, campgrounds, housing) serving visitors and park management functions. Includes areas where park development or intensive use may have substantially altered the natural environment or the setting for culturally significant resources.
economic multiplier effect	An effect in economics in which an increase in spending produces an increase in income and consumption greater than the initial amount spent. For example, if a park builds a new visitor center, it will employ construction workers and their suppliers as well as those who work in the visitor center. Indirectly, the new visitor center will stimulate employment in restaurants, dry cleaners and service industries in the factory's vicinity.
ecosystem	A system formed by the interaction of a community of organisms with their physical and biological environment, considered as unit.
ecosystem management	A collaborative approach to natural and cultural resource management that integrates scientific knowledge of ecological relationships with resource stewardship practices for the goal of sustainable ecological, cultural, and socioeconomic systems.
enabling legislation	The law(s) that establish a park as a unit within the national park system.
environmental assessment	A brief National Environmental Policy Act (NEPA) document that is prepared, with public involvement, (a) to help determine whether the impact of a proposed action or its alternatives could be significant; (b) to aid the Park Service in compliance with the National Environmental Policy Act by evaluating a proposal that will have no significant impacts, but may have measurable adverse impacts; or (c) as an evaluation of a proposal that is either not described on the list of categorically excluded actions, or is on the list, but exceptional circumstances apply.
environmental impact statement	A detailed National Environmental Policy Act analysis document that is prepared, with extensive public involvement, when a proposed action or alternatives have the potential for significant impact on the human environment.

Glossary List	
environmentally preferred alternative (***or environmentally preferable alternative***)	Of the action alternatives analyzed, the one that would best promote the policies in section 101 of the National Environmental Policy Act. This is usually selected by the planning team members. The Council on Environmental Quality encourages agencies to identify an environmentally preferable alternative in the draft Environmental Impact Statement (EIS) or Environmental Assessment (EA), but only requires that it be named in the Record of Decision (ROD).
ethnographic resource	A site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.
existing infrastructure	The systems, services, and facilities currently in a park unit, including buildings, roads, trails, power equipment, water supply, etc.
final plan	A final plan, or final general management plan, is a document that usually includes a discussion of the purpose and need for the plan, a description of NPS mandates and policies that affect the park, a description of the preferred alternative (the actual plan), a description of appropriate mitigation measures, and relevant appendixes (e.g., references, preparers, index). A final general management plan is prepared after the Record of Decision (ROD) or Finding of No Significant Impact (FONSI) is approved and a notice is published in the Federal Register. It describes only the selected alternative without all the accompanying compliance parts included in the environmental impact statement or environmental assessment.
Finding of No Significant Impact (FONSI)	A determination based on an environmental assessment and other factors in the public planning record for a proposal that, if implemented, would have no significant impact on the human environment.
facility costs	One-time costs related to a facility, such as the cost associated with building or trail.
fiscal year	From October 1 of one calendar year to September 30 of the following calendar year.
foundation statement (Foundation)	A statement that begins a park's planning process and sets the stage for all future planning and decision making by identifying the park's mission, purpose, significance, special mandates and the broad, parkwide mission goals. This are incorporated into a park's general management plan, but a foundation statement may also be produced as a stand-alone document for a park.
FTE (full time equivalent)	A computed number of employees, representing the number of full-time employees that could have been employed if the reported number of hours worked by part time employees had been worked by full-time employees. For example, two half-time employees equal one FTE.
fundamental resources and values	Those features, systems, processes, experiences, stories, scenes, sounds, smells, or other attributes determined to warrant primary consideration during planning and management because they are critical to achieving the park's purpose and maintaining its significance. A fundamental value, unlike a tangible resource, refers to a process, force, story, or experience, such as such as an island experience, the ancestral homeland, wilderness values, or oral histories.
gateway community	A community that exists in close proximity to a unit of the national park system whose residents and elected officials are often affected by the decisions made in the course of managing the park, and whose decisions may affect the resources of the park. Because of this, there are shared interests and concerns regarding decisions. Gateway communities usually offer food, lodging, and other services to park visitors. They also provide opportunities for employee housing, and a convenient location to purchase goods and services essential to park administration.
general management plan (GMP)	A plan that clearly defines direction for resource preservation and visitor use in a park, and serves as the basic foundation for decision making. General management plans are developed with broad public involvement.
geologic resources	Features produced from the physical history of the earth, or processes such as exfoliation, erosion and sedimentation, glaciation, karst or shoreline processes, seismic, and volcanic activities.

Glossary List	
Golden Gate	A strait in western California between the Marin Headland and Fort Point, which connects the Pacific Ocean and San Francisco Bay. Discovered in 1579 by Sir Francis Drake, it was known as the Golden Gate long before the name gained popularity during the gold rush of 1849. The Golden Gate Bridge, which spans the strait, was completed in 1937.
HABS/HAER/HALS	HABS is the Historic American Buildings Survey, the federal government's oldest preservation program; companion programs are HAER (Historic American Engineering Record), and HALS (Historic American Landscapes Survey). Documentation produced through the programs constitutes the nation's largest archive of historic architectural, engineering, and landscape documentation.
hikers' hut:	A rustic yet comfortable shelter for overnight stays to facilitate longer, multi-day experiences on park trails. A hiker hut would provide basic accommodations such as sleeping platforms and restrooms.
historic property	A district, site, structure, or landscape significant in American history, architecture, engineering, archeology, or culture; an umbrella term for all entries eligible for or included in the National Register of Historic Places.
human environment	Defined by the Council on Environmental Quality (CEQ) as the natural and physical environment, and the relationship of people with that environment. Although the socioeconomic environment receives less emphasis than the physical or natural environment in the CEQ regulations, the National Park Service considers it to be an integral part of the human environment.
impact	The likely effect of an action or proposed action upon specific natural, cultural or socioeconomic resources. Impacts may be direct, indirect, individual, cumulative, beneficial, or adverse.
impact topics	Specific natural, cultural, or socioeconomic resources that would be affected by the proposed action or alternatives (including no action). The magnitude, duration, and timing of the effect to each of these resources are evaluated in the impact section of an environmental assessment or an environmental impact statement.
impairment	An impact that, in the professional judgment of a responsible NPS manager, would harm the integrity of park resources or values and violate the 1916 NPS Organic Act's mandate that park resources and values remain unimpaired.
implementation plan	A plan that focuses on how to implement an activity or project needed to achieve a long-term goal. An implementation plan may direct a specific project or an ongoing activity.
indicators of user capacity	Specific, measurable physical, ecological, or social variables that can be measured to track changes in conditions caused by public use, so that progress toward attaining the desired conditions can be assessed.
invasive species	A nonnative species whose introduction does, or is likely to cause, economic or environmental harm or harm to human, animal, or plant health. These species have the ability to displace or eradicate native species, alter fire regimes, damage infrastructure, and threaten human livelihoods.
issue	Some point of debate that needs to be decided. For general management planning purposes, issues can be divided into "major questions to be answered by the general management plan" (also referred to as the decision points of the general management plan) and the "National Environmental Policy Act (NEPA) issues" (usually environmental problems related to one or more of the planning alternatives).
management concept	A brief, statement of the kind of place the park should be (a "vision" statement).
management zone	A geographical area for which management directions have been developed to determine what can and cannot occur in terms of resource management, visitor use, access, facilities or development, and park operations. Each zone has a unique combination of resource and social conditions and a consistent management direction. Different actions are taken by the National Park Service in different zones.
management zoning	The application of management zones to a park unit. The application of different type of zones and/or size of zones will likely vary in different alternatives.

Glossary List	
mitigation	A modification of a proposal to lessen the intensity of its impact on a particular resource. Actions can be taken to avoid, reduce, or compensate for the effects of environmental damage.
mobile combustion	A source of greenhouse gases generated by combustion of fossil fuels in highway (cars, trucks, buses), off-road (construction, agricultural), water-borne, rail and air vehicles.
manager	The managerial-level employee who has authority to make decisions or to otherwise take an action that would affect park resources or values. Most often, it refers to the park superintendent or regional director, but may at times include, for example, a resource manager, facility manager, or chief ranger to whom authority has been redelegated.
museum object	A material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually movable by nature or design. Museum objects include precontact and historic objects, artifacts, works of art, archival material, and natural history specimens that are part of a museum collection. Structural components may be designated museum objects when removed from their associated structures.
National Park Service Organic Act	The 1916 law (and subsequent amendments) that created the National Park Service and assigned it responsibility for management of the national parks.
national park system	The sum total of the land and water now or hereafter administered by the Secretary of the Interior through the National Park Service for park, monument, historic, parkway, recreational or other purposes.
Native American	Pertaining to American Indian tribes or groups, Eskimos and Aleuts, and Native Hawaiians, Samoans, Chamorros, and Carolinians of the Pacific Islands. Groups recognized by the federal and state governments and named groups with long-term social and political identities who are defined by themselves and others as Indian are included.
NEPA process	The objective analysis of a proposed action to determine the degree of its impact on the natural, physical, and human environment; alternatives and mitigation that reduce that impact; and the full and candid presentation of the analysis to, and involvement of, the interested and affected public—as required of federal agencies by the National Environmental Policy Act of 1969.
nonfacility costs	One-time costs not related to a facility, such as the cost of restoration of a landscape.
one-time costs	This term refers to the costs to perform a one-time action, such as construct, rehabilitate, or demolish a facility; and can include other project costs. One-time costs can also include non-facility costs, such as restoring a landscape.
ONPS (Operations of the National Park Service) Funds	funding that is provided for the day-to-day operations of parks including Golden Gate National Recreation Area and Muir Woods National Monument.
park partner	any state or local government (or subdivision thereof), public or private agency, organization, institution, corporation, individual, or other entity which is engaged in helping to ensure the protection, enhancement and enjoyment of the park's natural, cultural and recreation heritage.
Planning, Environment, and Public Comment (PEPC) System	An online database designed to facilitate the project management process in conservation planning and environmental impact analysis. It assists NPS employees in making informed decisions with regard to a number of compliance issues throughout the planning, design, and construction process.
policy level issues	The potential for some resources or values to be detrimentally affected by discretionary management decisions intended to achieve conditions consistent with the park's purpose.
potential boundary modifications	The description of areas or resources that meet criteria for boundary adjustments, along with the rationale for an adjustment.
preferred alternative	The alternative an NPS decision maker has identified as preferred at the draft EIS stage. It is identified to show the public which alternative is likely to be selected to help focus its comments.

Glossary List	
preserve	To protect from loss or harm; conserve. Historically, the terms preserve, protect and conserve have come collectively to embody the fundamental purpose of the National Park Service—preserving, protecting and conserving the national park system.
preservation (cultural resources)	The act or process of applying measures to sustain the existing form, integrity, and material of a historic structure, landscape or object. Work may include preliminary measures to protect and stabilize the property, but generally focuses upon the ongoing preservation maintenance and repair of historic materials and features rather than extensive replacement and new work.
primitive campsites	Primitive campsites are designated locations in remote areas of the park with only basic amenities such as tent pads and restrooms.
primary interpretive themes	The most important ideas or concepts to be communicated to the public about a park.
professional judgment	A decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account ▪ the decision maker's education, training, and experience ▪ advice or insights offered by subject matter experts and others who have relevant knowledge and experience ▪ good science and scholarship; and, whenever appropriate ▪ the results of civic engagement and public involvement activities relating to the decision
projected implementation costs	A projection of the probable range of recurring annual costs, initial one-time costs, and life-cycle costs of plan implementation.
public involvement (***also called public participation***)	The active involvement of the public in NPS planning and decision-making processes. Public involvement occurs on a continuum that ranges from providing information and building awareness, to partnering in decision making.
purpose	The specific reason(s) for establishing a particular park.
Record of Decision *(ROD)*	The document that is prepared to substantiate a decision based on an environmental impact statement (EIS). It includes a statement of the decision made, a detailed discussion of decision rationale, and the reasons for not adopting all mitigation measures analyzed, if applicable.
scoping	Internal National Park Service decision making on issues, alternatives, mitigation measures, the analysis boundary, appropriate level of documentation, lead and cooperating agency roles, available references and guidance, defining purpose and need, and so forth. External scoping is the early involvement of the stakeholders, interested individuals and organizations, local societies, environmental groups, park visitors, etc.
significance	Statements of why, within a national, regional, and systemwide context, the park's resources and values are important enough to warrant national park designation.
soundscape (***natural***)	The aggregate of all the natural, nonhuman-caused sounds that occur in parks, together with the physical capacity for transmitting natural sounds.
special mandates	Legal mandates specific to the park that expand upon or contradict a park's legislated purpose.
stakeholders	Individuals and organizations that are actively involved in the project, or whose interests may be positively or negatively affected as a result of the project execution /completion. They may also exert influence over the project and its results. For GMP planning purposes, the term stakeholder includes NPS offices/staff as well as public and private sector partners and the public, which may have varying levels of involvement**.**
standards	The minimum acceptable condition for an indicator of a desired condition.
superintendent	The senior on-site NPS official in a park. Used interchangeably with "park superintendent," "park manager," or "unit manager."

Glossary List	
sustainable design	Design that applies the principles of ecology, economics, and ethics to the business of creating necessary and appropriate places for people to visit, live in, and work. Development that has a sustainable design sits lightly upon the land, demonstrates resource efficiency, and promotes ecological restoration and integrity, thus improving the environment, the economy, and society.
sustainable practices/principles (***also sustainability***)	Those choices, decisions, actions and ethics that will best achieve ecological/ biological integrity; protect qualities and functions of air, water, soil, and other aspects of the natural environment; and preserve human cultures. Sustainable practices allow for use and enjoyment by the current generation, while ensuring that future generations will have the same opportunities.
visitor	Anyone who physically visits a park for recreational, educational or scientific purposes, or who otherwise uses a park's interpretive and educational services, regardless of where such use occurs (e.g., via Internet access, library, etc.)
user capacity (also called carrying capacity)	The types and levels of visitor and other public use that can be accommodated while sustaining the desired resource conditions and visitor experiences that complement the purpose of the park. The National Park Service has adopted this term in preference of the term *visitor capacity*, which does not include all public use.
visitor experience	The perceptions, feelings, and reactions a person has while visiting a park. Examples of visitor experiences include a sense of being immersed in a natural landscape; a feeling of being crowded; a feeling of being in an area where the sights and sounds of people and vehicles are predominant; having a sense of challenge and adventure; or a perception of solitude and privacy.
warming hut	Local term for a visitor facility that was pioneered at Crissy Field. Used in this general management plan to indicate a modest structure providing comfortable shelter and a range of services which may include park orientation, limited food and beverage, limited retail, and restrooms.
zone	See "management zone."

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Golden Gate National Recreation Area • Muir Woods National Monument

Final General Management Plan / Environmental Impact Statement

U.S. Department of the Interior • National Park Service